BEFORE YOU REORGANIZE...
Sometimes the urge to revamp the IT department should be resisted, cautions Bruce A. Stewart. **PAGE 24**

NO RESTRAINTS
The Federal Communications Commission rules that Verizon can change rates without its consent. **PAGE 8**

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NASA's SAP Launch Drags

Inspector general blasts $116M effort

BY MARC L. SONGINI

A major upgrade to the core financial systems of the National Aeronautics and Space Administration has encountered turbulence from end users and the agency's inspector general before getting far off the ground.

The $116 million financials upgrade is the cornerstone of a larger project, dubbed the Integrated Enterprise Management Program, which is expected to cost $1.1 billion. The IEMP uses R/3 financial applications from SAP AG, and when completed, it's expected to improve financial, contractual, asset management and other procedures throughout NASA.

However, critics claim that five years into the estimated eight-year project, the IEMP

NASA, page 16

NASA's Costly Liftoff

CORE FINANCIALS: SAP R/3 4.6

RUNS ALL 10 NASA facilities

NASA PLANS UPGRADE to mySAP ERP in 2007

BY JANUARY 2005 82 IEMP contracts worth $630M awarded to 29 firms

FINAL PRICE TAG: $1 billion-plus

SOURCE: NASA

GM to Automate Parts Supply Chain

New restocking system slated for 2007

BY PATRICK THIBODEAU

General Motors Corp. is turning to automation to improve its distribution of auto parts to dealers, ending practices that produced a bumpy ride for its parts supply chain.

By the end of 2007, GM expects to have about 8,000 U.S. and Canadian dealers using the Retail Inventory Management, or RIM, system, which relies on intelligence gleaned from nationwide parts-sales data to recommend restocking policies at dealerships.

Today, GM parts distribution relies heavily on the judgment and practices of parts managers at individual dealerships, who typically wait until the end of the week to submit parts orders in batches. The result: A large percentage of parts orders arrive all at once

GM, page 16

NEWSPAPER

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RICHARD BORGE

New Wrinkles in Storage

SPECIAL REPORT

With various data disasters in the headlines, storage has become a high-profile function vital to security and business continuity. This special report identifies the latest trends in **encryption, backup and provisioning. Stories begin on page 27.**

Portable Storage Devices Pose IT Security Risk

How much damage can a memory stick or iPod do? Plenty, say users and analysts

BY LUCAS MEARIAN

Baptist Memorial Health Care Corp. in Memphis recently found itself dealing with a proliferation of user-owned plug-and-play USB port drives that posed a security risk to sensitive patient data.

Lenny Goodman, IS director for desktop management at the health care company, said users found it difficult to copy significant amounts of data to floppy disks, and the company "did not allow CD writers."

So users turned to "the USB flash drive, with enormous capacity and zero installation," Goodman said earlier this month. "Very handy, very risky — both as a way for data to leave and a way for malware to arrive. We had to do something."

The result: Baptist Memorial created strict policies around the use of flash memory sticks, iPod music players and other portable storage devices by standardizing on USB memory sticks that have native encryption and password protection.

The Health Insurance Portability and Accountability Act "mandates that all health care organizations develop a methodology to account for all removable media," Goodman said.

Security Risk, page 57

INSIDE

Cabell Huntington Hospital is switching its storage system from tape to a 13TB optical disc.

Page 57

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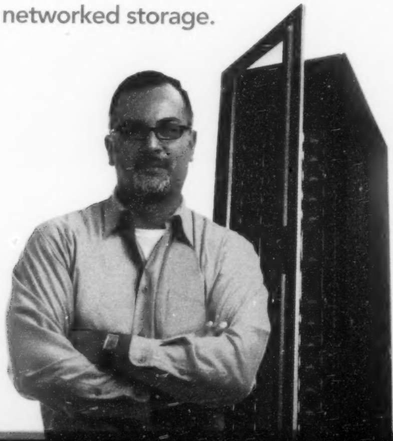

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8 **Verizon's exemption** from FCC rules requiring government approval of prices for high-speed data services for businesses outrages corporate customers.

12 **Oracle** announced its Oracle Business Intelligence Suite, the company's first foray into the bustling enterprise BI market.

14 Global Dispatches: **Microsoft** details a global plan for taking legal action against suspected operators of phishing Web sites; and NTT Communications extends to China a service to help users plug corporate information leaks.

18 **Sony Online** is replacing its Oracle 9i databases with an open-source offering from EnterpriseDB.

23 Q&A: **Golden Gate Capital** has launched a company called Extensity to develop and sell the financial applications and BI tools of Geac. President and CEO Ken Walters discusses his plans for the new firm.

57 **Tape backups** were too unreliable for Cabell Huntington Hospital, which now uses an optical jukebox as a near-line storage device.

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10 On the Mark: **Mark Hall** gets the word from a developer of service-oriented architecture tools that most vendors are approaching SOA from the wrong direction. He also chats with an investment banker who says that as vendors merge, CIOs should carefully assess the business prospects of their best-of-breed vendors. And then he takes a look at software that promises to catch supply chain fraud and overpayments before they happen.

24 **Don Tennant** says the IEEE-USA is to be commended for responding to a bid to raise the H-1B visa cap with positive proposals rather than the usual knee-jerk rants.

24 **Bruce A. Stewart** cautions that an urge to reorganize your IT department should be resisted if you can't come up with a solid justification.

25 **John D. Halamka** is relieved that Research In Motion settled its patent dispute with NTP over RIM's popular BlackBerry service before an injunction was issued. But the threat of such actions in other legal disputes has him wary.

58 Frankly Speaking: **Frank Hayes** says IT shops working on challenging development projects should see an object lesson in the grumbling that has followed Vista's latest delay. His advice: Make no promises.

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New Wrinkles in Storage

SPECIAL REPORT

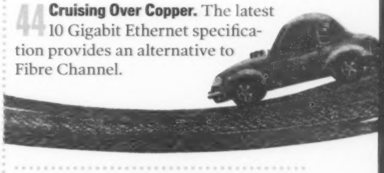
As data storage becomes a high-profile function vital to business continuity and security, this special report identifies the latest trends in encryption, backup and provisioning. **Package starts on page 27.**

28 **Safe and Sound.** Vincent Fusca, operations director at Dartmouth Medical School's Center for Evaluative Clinical Studies, uses two network appliance servers to keep the center's data encrypted. Here's how some other organizations are encrypting their stored data.

32 **DIY Recovery.** Disk-based storage cuts backup headaches and lets users recover data from active archives.

36 **Battle of the Bulge.** Thin-provisioning applications send a message to storage-hungry business units: Finish what's on your plate before going back for seconds.

40 **Backing Up the Virtual Machine.** Praneeth Machettira, online technical director at Suffolk University's Sawyer School of Management, says special backup software provides the school with full replication in real time of everything taking place on its virtual servers.



44 **Cruising Over Copper.** The latest 10 Gigabit Ethernet specification provides an alternative to Fibre Channel.

46 QuickStudy: **Virtual Tape.** By making disks look like tape, a virtual system lets IT use its existing tape-based scheduling procedures and practices, scripts and workflows. Read this primer to find out more.

48 Careers: **The Storage Specialty.** The data explosion is bringing more status, and higher salaries, to storage workers.

50 Opinion: **Storage-free Zone.** Ismael Ghalimi has undertaken a radical experiment to work without local storage for applications and data. Columnist Mark Hall asks: Is it a crazy idea?

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The following stories can be found online at computerworld.com/thisweek.

Audio Overview: A recent spate of incidents involving lost or stolen data is pushing IT managers to consider encryption to secure unprotected data in storage networks, databases, tapes and other devices. Listen to this overview to learn about encryption protocols used in enterprise environments today and encryption technologies that are on the horizon.

Data Points: These downloadable PowerPoint slides offer statistics on stored data encryption, storage market leaders and storage administrator salaries.

Opinion: If encryption is such a useful way to protect sensitive data, why are so few companies using it, asks security expert Larry Ponemon? The Ponemon Institute surveyed almost 800 security and privacy officers to find the answer. Here's what the research revealed.

AT DEADLINE

Lucent, Alcatel in Merger Negotiations

Lucent Technologies Inc. and Alcatel SA last week confirmed that they are discussing a possible merger. In a statement, the companies said they are negotiating a "merger of equals that is intended to be priced at market." The statement said there is no guarantee that the companies will reach an agreement. Lucent and Paris-based Alcatel held similar talks in 2001, but those negotiations were unsuccessful.

Exploit Posted to Engage New IE Bug

An exploit has become publicly available for a critical – and as-yet unpatched – vulnerability in Microsoft Corp.'s Internet Explorer browser. The exploit, which has been posted on several Internet sites, can be used to take advantage of a flaw in the way IE processes information. Experts said the exploit can be turned into a virus or a worm.

U.S. Objections Halt Check Point Buy

In response to protests by U.S. government agencies, Internet security company Check Point Software Technologies Ltd. has withdrawn its application to acquire Sourcefire Inc., a vendor of intrusion-prevention technologies. The U.S. Department of Defense and the FBI objected to a foreign-owned firm controlling Sourcefire technology, which is used to protect the computer assets of the DOD and the National Security Agency. Check Point is based in Ramat Gan, Israel.

Sun Shuts Down Grid Service on First Day

A denial-of-service attack forced Sun Microsystems Inc. to shut down a service on its Sun Grid system on March 22, the first day it was open for public use. The attack targeted a text-to-speech application developed by Cepstral LLC that was hosted on the grid. Once the attack was discovered, Sun limited availability to registered users.

Corporate IT Unfazed by Vista Delay

IT managers say rollouts of Microsoft's operating system shouldn't be affected

BY ERIC LAI AND CAROL SLIWA

INFORMATION technology executives last week said that Microsoft Corp.'s decision to delay the release of some versions of Windows Vista — those aimed at consumers and small businesses — likely won't affect their rollouts of the software.

That's primarily because few of them planned to aggressively roll out the new operating system.

Microsoft will release Windows Windows Vista Business and Windows Vista Enterprise to volume-licensing customers in November. However, the four consumer editions of Vista, although still being released to manufacturing in November, won't arrive on store shelves until January — after the holiday shopping season. Microsoft had expected Vista-based PCs to be on sale by late November.

WEST says Microsoft was "wise" to delay Vista so it had time to develop a "higher-quality" product.

"No surprise," Marc West, CIO at H&R Block Inc., said of the delay. The Kansas City, Mo.-based company has 120,000 PCs throughout its thousands of tax-preparation branch offices running either Windows 2000 or XP. According to West, H&R Block has no plans to upgrade to Vista until 2009 at the earliest.

"Given the current state of XP, it is wise for them to go for a higher-quality and more security-tested product versus rushing for a deadline and having problems," he said.

"I'd rather have a stable, secure product than a rushed product that immediately needs to be patched," said John-Mark Tucker, IT manager at Seattle-based manufacturer Red Dot Corp., which is part of Microsoft's Technology Adoption Program (TAP).

> **I'd rather have a stable, secure product than a rushed product that immediately needs to be patched.**
>
> **JOHN-MARK TUCKER,** IT MANAGER, RED DOT CORP.

Another user, Steven Naylor, vice president and director of IT at Federal Home Loan Bank of Topeka in Kansas, said he intends to stick to existing plans and hold off on any upgrade to Vista until after Microsoft's first service pack is released.

"For most companies, this slip will not be an issue, because it will take them 18 months for testing and planning before they can start deploying Windows Vista," said Michael Silver, an analyst at Gartner Inc.

"Microsoft could ship the business editions into 2007 without a big impact on what most companies would do, and that's certainly possible," according to Silver.

In No Big Rush

Both Gartner and Forrester Research Inc. predicted last year that enterprise adoption of Vista would be sluggish. For instance, Forrester said in December that its surveys indicated that only a third of big business users planned to start deploying Vista when it became available — or even by the time the Service Pack 1 update ships, which typically takes a year or so.

Jim Allchin, co-president of the company's platform and services division, announced the delay on March 21, saying that the company wants to ensure that the operating system is solid and secure before releasing it. Later in the week, Microsoft said it will postpone the release of the consumer version of Office 2007 to keep it in line with the new Vista schedule.

Even companies with speedier Vista rollout plans said the delay in shipping the consumer version won't affect their schedules. "The Microsoft announcement does not adversely affect us," said Robert Fort, director of IT at Los Angeles-based music retailer Virgin Entertainment Group Inc.

Virgin has about 500 PCs serving as in-store point-of-sale terminals and kiosks running a combination of Windows 2000, Windows Embedded for Point of Service and an old IBM "green-screen" operating system. The retailer is part of Microsoft's TAP and "will continue to follow its timeline," Fort said.

TAYLOR: "Vista has been surprisingly stable."

Georgia's Fulton County has deployed Vista in production "on a limited basis," and "when the product is released for production by Microsoft, we will continue with our rollout to be completed throughout the enterprise as quickly as prudently possible," said Robert Taylor, CIO and director of IT, in an e-mail.

The county government is also part of TAP and has found that "Vista has been surprisingly stable," Taylor said. "The product looks very good with the enhanced security features." ▸

Microsoft Realigns Windows Unit

MICROSOFT last week reshuffled its platforms and services division just two days after disclosing that shipments of its new Windows Vista software will be delayed.

The realignment includes the creation of a new group, to be headed by Senior Vice President Steve Sinofsky, to oversee development of the Windows operating system and Windows Live services.

MICROSOFT REALIGNMENT

Platform and Services Division Units

- Windows and Windows Live Group
- Core Operating System Division
- Windows Live Platform Group
- Online Business Group
- Market Expansion Group
- Windows Client Marketing Group
- Server and Tools Business Group
- Developer and Platform Evangelism Group

The restructuring is part of a plan by the vendor to repair what it called a lack of agility and growth in the division that oversees its largest property, Windows. It also breaks up and renames groups that were formerly a part of the MSN division.

Kevin Johnson, co-president of the platforms and services division, announced the changes in an e-mail to the division. Johnson said he and Co-President Jim Allchin worked out the changes together to prepare for Allchin's impending retirement at the end of this year.

The Windows and Windows Live group now overseen by Sinofsky is one of eight that make up the platforms and services division, according to Microsoft.

Sinofsky joined Microsoft in 1989 as a software design engineer and had been with the Office team since its formation in 1994, first serving as the director of program management for that group.

– ELIZABETH MONTALBANO, IDG NEWS SERVICE

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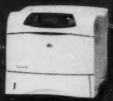

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FCC Deregulates Verizon Broadband Prices

Corporate customers blast FCC's unusual move and fear price increases

BY MATT HAMBLEN

THE FEDERAL Communications Commission announced last week that it deregulated the prices Verizon Communications Inc. can charge businesses for high-speed data services, a move that outraged corporate customers.

"Verizon was already price-gouging customers while it was regulated, and this action significantly raises the risk for prices to increase on the broadband building blocks for enterprise customers," said Washington attorney Colleen Boothby. She represents a group of 27 corporate customers known as the Ad Hoc Telecommunications Users Committee.

The FCC decision, which took effect March 19 without a formal vote, exempts Verizon from long-standing regulations requiring carriers to file rates with the FCC for approval.

The corporate telecommunications user group had argued in a 14-page brief to the FCC that Verizon shouldn't be exempted from FCC rules because business broadband markets are not yet competitive and services are costly.

"This kind of decision — to give Verizon what it wants, regardless of whether that hurts customers — is what gives Washington a bad name," Boothby said. She and other government observers predicted that the decision will be appealed.

"Anybody who buys these services for a living knows that the market for business broadband just isn't competitive," Boothby said. "That may be a politically inconvenient fact, but it's still a fact."

With one seat unfilled on the five-member FCC, commissioners were split along Democrat and Republican party lines over the Verizon petition for exemptions. Although the matter never came to a vote, Verizon's petition was approved under a rarely used statute that allows a company's request to be approved unless the FCC denies it within a certain period of time. That period expired on March 19, and the decision was announced the next day.

MARTIN: The FCC eliminated "overly burdensome regulations."

FCC Chairman Kevin Martin and Commissioner Deborah Taylor Tate, both Republicans, said in a joint statement that the FCC decision will help Verizon roll out broadband by eliminating "overly burdensome regulations" that deter investment in new services.

But the Democrats on the FCC, Michael Copps and Jonathan Adelstein, said in separate statements that they opposed the Verizon exemptions. Copps complained that the ruling "erases decades of communications policy in a single stroke," and said, "This is not the way to make environment-altering policy changes."

Verizon welcomed the FCC action, which it said will help to control prices. "The end result will be greater innovation, more competitive pricing and more flexible arrangements tailored to meet the needs of our business customers," said Susanne Guyer, Verizon's senior vice president for federal regulatory affairs, in a statement.

President Bush nominated Republican Robert McDowell to be the fifth FCC commissioner last month, but he has not yet been confirmed by the U.S. Senate. ▸

Fidelity Laptop Theft Exposes HP Employees

Held personal data of more than 196,000 workers

BY JAIKUMAR VIJAYAN

Fidelity Investments last week confirmed that a laptop computer containing confidential information on more than 196,000 current and former employees at Hewlett-Packard Co. and companies it acquired was recently stolen from the financial company. The computer theft may have exposed the employees' names, Social Security numbers and compensation details.

Though there is no evidence yet that the stolen information has been misused in any manner so far, the Boston-based financial services firm has begun sending out letters informing affected HP workers about the incident and recommending follow-up action, a spokeswoman said via e-mail.

The laptop, which contained personal data of participants in an HP-sponsored retirement plan, was stolen from employees who had brought it to an off-site meeting, according to the spokeswoman.

"It is not our practice to have that level of data on a laptop," she said. "We limit significantly the use of such confidential data outside of Fidelity to only those instances where the information is appropriate or required."

The spokeswoman said the laptop application with the personal data was running on a temporary license that has since expired. As a result, the application should be locked and the data should be scrambled, she said.

"At this time, we are unaware of any misuse of the information contained in the software on the laptop," she said, adding that Fidelity has been monitoring activity in the affected HP accounts.

"We have taken steps to implement extra security processes requiring additional authentication for access to those HP accounts, as well as other measures to prevent unauthorized use," she said without elaborating.

Following the theft, Fidelity contacted the three principal credit-reporting bureaus to advise them of the situation, and it has arranged for affected HP employees to enroll in a free credit-monitoring service.

The compromise highlights the dangers of storing confidential data on mobile devices without adequate security controls, said Robert Egner, a vice president at security vendor Pointsec Mobile Technologies Inc. in Mokena, Ill.

Such systems need additional controls to protect against accidental data exposure when mobile devices are lost or stolen, he said. ▸

IBM Exec Touts Mainframe Security

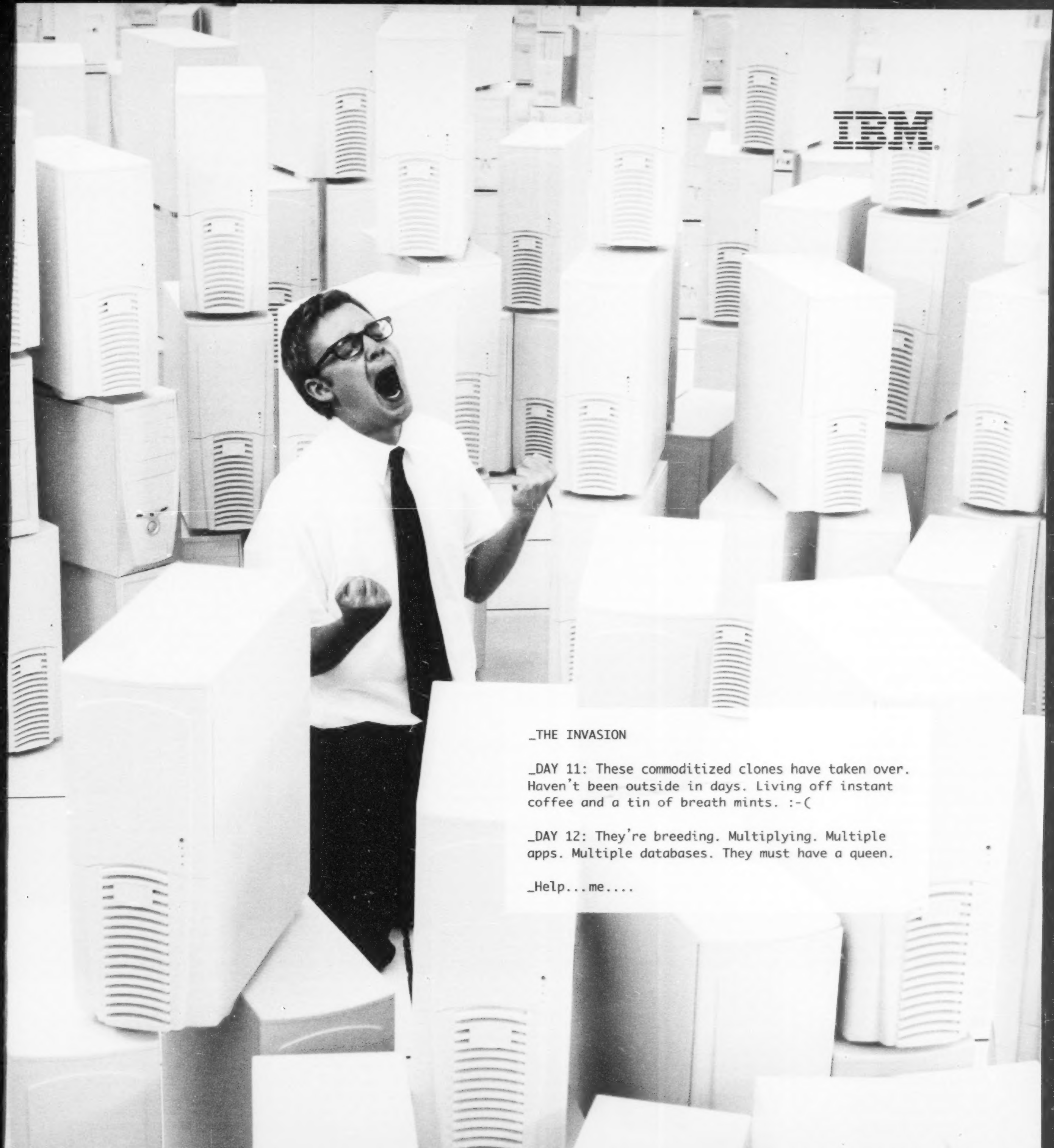
Jim Stallings *is two months into his job as general manager of IBM's mainframe System z division. In an interview this week with* Computerworld*'s Patrick Thibodeau, Stallings mapped out some of his plans, including security, the training of 20,000 mainframe workers by 2010 and the prospect of new specialty processors.*

Is the z9's Advanced Encryption Standard capability changing the way customers use mainframes? The No. 1 concern/question that I get from customers is about security — everything from key management, centralized management of encryption across the enterprise, AES, intrusion detection. They want us to help them manage and exploit the capability for security on a mainframe. Most of our customers tell me it's one of the principal reasons they buy a mainframe — because it's secure.

IBM has announced a goal to have 20,000 professionals trained in zSeries skills by 2010. Where are you on that plan? We're ahead of schedule. I had no idea that the market would respond as well as it did. We got a special challenge to get 10,000 [trained] in China. And we are well on the way of doing that. We are ahead of schedule. We will get to the 20,000 by 2010, and the biggest reason is our customers, our business partners [and] the universities are all working on this problem together. We've got a lot of people that are now coming to see the mainframe, know about the mainframe, learn, get a job working on the mainframe.

What I'm finding as I talk to some of the younger employees and younger people around us is they don't have legacy — they don't have biases [from] the distributed system era, the Unix era. What they are thinking about is security, resiliency, global reach, and they want to work on things that can do that. A lot of these kids grew up in the open world, they are very familiar with Linux and other open-source, and when they learn the mainframe runs five different operating systems, they are thrilled by that. So we think we are going to get the 20,000 easy.

What is the division's next task? [Customers] want us to exploit every opportunity to make things automatic, to make the security be as intelligent as possible and not have to rely on individuals. The direction is in the area of autonomic and automation around security. ▸



_THE INVASION

_DAY 11: These commoditized clones have taken over. Haven't been outside in days. Living off instant coffee and a tin of breath mints. :-(

_DAY 12: They're breeding. Multiplying. Multiple apps. Multiple databases. They must have a queen.

_Help...me....

BRIEFS

Microsoft Begins OpenXML Effort

Microsoft Corp. has formed a community of developers to promote the OpenXML format as an international standard. Microsoft Chairman and Chief Software Architect Bill Gates launched the community, called the OpenXML Formats Developer Group, at the Microsoft Office System Developers Conference in Redmond, Wash. The community rivals a recently launched group that promotes the OpenDocument format standard.

Qualcomm, Techfaith Create Chinese Firm

Qualcomm Inc. and China Techfaith Wireless Communication Technology Ltd. have agreed to jointly invest $35 million in a new wireless application software company in China. Called Techfaith Software China Ltd., it will initially develop applications and services for 3G Code Division Multiple Access handsets.

VeriSign Buys M-Qube for $250M

VeriSign Inc. has agreed to buy M-Qube Inc., a supplier of software and services for delivering digital content to mobile phones, for about $250 million. The security software maker said that the move is part of an effort to build a business selling products and services that let companies distribute digital content via broadband and mobile networks.

Tokyo Exchange Plans IT Overhaul

Tokyo Stock Exchange Inc. plans to spend about $382 million over the next three years on upgrading and replacing its IT systems. The exchange has faced a series of IT-related problems and missteps that culminated in the early closing of the market on Jan. 18 – a first in the exchange's history. The new plan includes spending about $127 million to upgrade current systems and $255 million to build a new system.

[ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY BUZZ BY MARK HALL]

OH MY GAWD! WHAT IS THAT?
THAT'S, UM, MY GENERAL-PURPOSE, OFF-THE-SHELF, USE 'EM WHERE YOU NEED 'EM WEB SERVICE COMPONENTS AND, UM,... FISHBOWL.

MATTHEW FAULKNER

Turn SOA on Its Head . . .

. . . to get business services instead of Web services. Bobby Soni, chief strategy officer at Webify Solutions Inc., contends that many IT vendors are approaching service-oriented architecture projects from the wrong direction. "IBM, Oracle, BEA, SAP and others are going at the SOA problem from the bottom up," he says. "You need to go from the top down." Soni argues that his competitors are too focused on stringing together lots of interrelated components, which is good technology, but not necessarily good for your business. At Austin-based Webify, "we do not create Web services," he says. "We create business services." That is, the company builds Web services with functions that are specific to vertical industries. For example, it sells software that recognizes an independent insurance agent's overall business value to an insurer, so the policies he writes can be given the appropriate priority. Webify's software virtualizes all transactions, Soni says. You can't do that, he adds, without understanding the business domain. The next industry that Webify will target is telecommunications — a set of telecom business services should be ready in Q3. Pricing for Webify's Industry Fabric software starts at about $250,000.

SONI says SOA needs domain expertise.

Merger mania forces CIOs to look . . .

. . . carefully at the business prospects of their best-of-breed vendors. Many of the companies that supply cutting-edge IT tools and services tend to be small and are run by entrepreneurs. You knew that already, of course. But do you know what their long-term business plans are? You should, especially now, says Eric Gebaide, managing director at Innovation Advisors Inc. in New York. His company, which he refers to as "the tallest dwarf in the village" of investment banks, advises both buyers and sellers of tech vendors on deals worth $100 million and under. Gebaide says he thinks 2006 will be a good year for him because "everyone is feeling good about revenue flow" and sellers believe their company valuations are peaking. Add to that the limited prospects that small companies have of going public, and you get the perfect storm for mergers and acquisitions to occur. Gebaide advises CIOs to have heart-to-hearts with their best-of-breed technology suppliers about who they might consider to be potential buyers. You can even assist, he says, by being a reference account and talking to a current vendor's suitors. That might help you get a better understanding of how a tool you depend on would fit into a new owner's plans.

GEBAIDE: CIOs need to know vendor M&A status.

Synchronize the hiring practices in HR . . .

. . . and your IT department. In last week's issue, *Computerworld* columnist Thornton A. May blasted human resources as being "out of sync with IT work," to quote the headline on his column. Michael Gregoire, CEO of San Francisco-based Taleo Corp., doesn't disagree. Yet he sympathizes with HR folks, especially those at large companies. Automation is paramount for HR, he says. You need a system that matches skills with open jobs and then tracks the skills of employees for as long as they're with your organization so you can identify the best internal candidates for open jobs. Taleo's namesake hosted service does just that, Gregoire claims. Next month, Taleo will add extensive "onboarding" features for adding new employees, he says. Once someone is hired, Taleo's service will, among other things, alert IT to deliver a computer and assign appropriate usage rights in network directories. Also being added are Web services hooks into external databases, so hiring managers can check whether potential workers actually earned the academic credentials they claim and see if they are highly sought after — not necessarily by other employers but, say, by the police.

GREGOIRE: Automate HR.

See supply chain fraud and overpayments . . .

. . . before they happen. That's the claim of Michael Lustig, CEO of Apex Analytix Inc. in Greensboro, N.C. His company's FirstStrike software checks invoices from your supply chain against purchasing-contract discounts to ensure that your business is paying the prices it's supposed to be paying. According to Lustig, overpayments can be equal to as much as 0.1% of a company's revenue. And although transaction fraud on sales to customers is an aberration, it does happen, he says, adding that FirstStrike can help there as well. The software can spot high-risk billing addresses, such as prisons. Lustig says it also calculates the safest areas in which to do business, with New Hampshire and the Corn Belt usually ranking among them. The Southeastern states tend to be the source of more fraud than elsewhere, he notes. Next month, FirstStrike will add support for multicurrency transactions and value-added tax estimates to help companies manage their European suppliers' contracts. There are several pricing options, including fees based on the amount of money FirstStrike recovers for your company. ▸

LUSTIG: FirstStrike weeds out high-risk customers.

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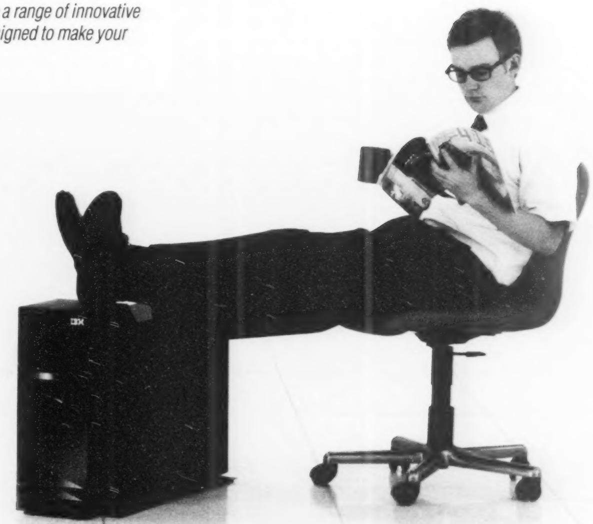

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BRIEFS

Samsung Execs Guilty of Price Fixing

Three executives at Samsung Electronics Co. have agreed to plead guilty and serve jail time for participating in a worldwide conspiracy to fix dynamic RAM prices. Sun Woo Lee agreed to a sentence of eight months, while Yeongho Kang and Young Woo Lee both agreed to serve seven months, according to the U.S. Department of Justice. The three agreed to pay $250,000 fines and cooperate with the DOJ.

Dell to Purchase High-End PC Maker

Dell Inc. has agreed to buy high-performance PC vendor Alienware Corp. for an undisclosed price. Alienware will continue to operate as a wholly owned subsidiary of the PC maker and will continue to develop, market, sell and support Alienware products. Dell said the new offerings will complement its high-end PC line.

IBM Unveils SOA Management Tools

IBM has added new tools and consulting services designed to help companies establish the policies and controls needed to manage a service-oriented architecture. The Service Oriented Architecture Governance product combines software from IBM's Rational and Tivoli software units with consulting services to provide SOA best practices and processes.

UMG, Equant Sign Outsourcing Deal

Universal Music Group has signed a five-year communications outsourcing deal with Paris-based Equant that it hopes will save it at least 10% on its $20 million in yearly networking costs to operations in 48 countries. Equant will be responsible for all of UMG's communications infrastructure, including a global WAN and LAN, managed voice and IP telephony, and Web hosting. The deal is valued at tens of millions of dollars annually, according to UMG.

Oracle Takes Aim at Enterprise BI Market

Product suite represents entry into the business

BY HEATHER HAVENSTEIN

ORACLE CORP. last week moved to stake a claim in the increasingly crowded enterprise business intelligence market with a new suite of tools and applications.

The Oracle Business Intelligence Suite will be part of Oracle's Fusion Middleware product family and will be offered in three editions: an entry-level bundle targeting Microsoft Corp. at the low end, a standard edition, and an enterprise edition for high-end users.

The enterprise edition, which targets BI vendors such as Business Objects SA, SAS Institute Inc. and Cognos Inc., will integrate analytic tools and applications from Siebel Systems Inc. with Oracle BI tools. It will use Fusion Middleware to link into non-Oracle applications, data sources and tools.

James Archuleta, director of CRM at Alaska Airlines Inc. in Seattle, said the Oracle tools will eventually help ease integration among his Oracle database, Siebel analytic applications and PeopleSoft back-office applications.

"We're looking at Oracle being able to sell us one package at one point in time where . . . we'll have one set of developers who have one skill set — Oracle Fusion," he said.

Still, Archuleta said he hopes Oracle will be receptive to the airline's suggestion that Oracle integrate the analytic tools from Siebel with a statistical tool for more heavy-duty analysis in the future.

"We trick Siebel analytics to do this, but it doesn't have the horsepower that a statistical package does," he said.

Basheer Khan, managing partner at systems integrator Innowave Technology LLC in Irvine, Calif., and an official of the Oracle Applications User Group, said most Oracle users have been forced to use disparate BI tools that were packaged with PeopleSoft, J.D. Edwards or Oracle enterprise applications in the past.

The new BI suite from Oracle will provide a single option for these users, he added.

Oracle President Charles Phillips said BI will be a "fourth leg" of products for the vendor, along with its database, enterprise application and middleware product lines.

The new suite will include query and analysis, enterprise reporting, dashboards, workflow, business activity monitoring, and integration with Microsoft Office and Excel. It will tie together best-of-breed products on top of a common metadata model and user interface to allow users to get more consistent reports and results from analyses of data sources across the enterprise, Oracle executives said.

Keith Gile, an analyst at Forrester Research Inc., said that Oracle has not had a strong BI strategy. Instead, its BI tools have been part of the database, application server or enterprise applications, he noted.

While he applauded Oracle for laying out its plans for an integrated BI suite of tools and applications, Gile said the company will still have some ground to make up in terms of competing with established vendors of best-of-breed reporting and analysis tools. ▶

Point by Point: Oracle Business Intelligence Suite

Enterprise Edition includes:	Standard Edition includes:	Standard Edition One includes:
Relational and OLAP query and analysis	Custom application development	Oracle Warehouse Builder
Ad hoc query and analysis tools	Enterprise reporting	Reporting, querying and analysis tools
Thin-client analytic dashboards	Spreadsheet add-in	Oracle Database 10g Standard Edition One
Enterprise reporting	Ad hoc query, reporting and analysis with dashboard features	
Integration with Microsoft desktop tools		

SAS Makes a Move Into Data Integration

SAS INSTITUTE INC. this week plans to announce a new project intended to expand its reach into the data integration market and aimed at helping companies link the various sources of operational data.

At its SAS Users Group International (SUGI) conference in San Francisco, SAS will roll out a new customer data integration server and detail new features in its enterprise data integration server, said Jim Goodnight, CEO of the Cary, N.C.-based company. SAS will expand the data-quality features in the enterprise data integration server for profiling, monitoring and cleaning data, he said.

"It's a shame to wait until people want to use data in a warehouse before cleaning up the data," Goodnight said. "It should be cleaned up in the operational system."

The new customer data integration tools will be designed to allow companies to synchronize, consolidate and manage customer information from across an enterprise, according to SAS.

Debbie Weisensee, senior business analyst and manager for a BI project at McMaster University in Hamilton, Ontario, said her organization has been using the SAS data-integration server as part of an ongoing effort to build an enterprise-wide data warehouse.

The university did an assessment of data quality at the beginning of the project and changed some data definitions to ensure that they were consistent across its campus. However, some records come out of transactional systems with missing fields or other problems and have to be rejected before being added to a data mart, she said. Now the university has to do some extra programming to check for certain data-quality requirements. Weisensee said she is interested in learning more about the new features in the integration server to possibly eliminate some of that programming.

In addition, the university in September will be rolling out SAS performance management software to create scorecards, another project where the quality of the data in the warehouse will be critical, she said.

Keith Gile, an analyst at Forrester Research, said the data integration initiative shows that SAS is maneuvering to expand the definition of what is included under the BI umbrella to include support for the data warehouse.

"This is extending BI to be an information platform . . . not just the reporting and analysis part of BI," he said. "It shouldn't be, 'Let's get it out to the BI tools before we realize it's dirty data.' "

– HEATHER HAVENSTEIN

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GLOBAL DISPATCHES

An International IT News Digest

Microsoft Begins Legal Attacks on Phishing

BRUSSELS

MICROSOFT CORP. by midyear plans to initiate more than 100 legal actions against suspected operators of fraudulent Web sites in Europe, the Middle East and Africa. The plan is part of a global antiphishing campaign announced by the software vendor last week.

Neil Holloway, president of Microsoft's Europe, Middle East and Africa business unit, detailed the Global Phishing Enforcement Initiative at a roundtable discussion that was hosted here by the European Internet Services Providers Association and supported by Interpol and Microsoft.

Holloway said that Microsoft is planning to work with law enforcement agencies, companies in a variety of industries and governments to educate consumers about phishing, increase prosecutions of alleged cybercriminals and identify new ways to use technology to combat Internet scams.

Microsoft has already taken action against 53 people in Austria, Egypt, France, Morocco, Spain, Turkey and the U.K. for allegedly enticing Internet users to visit phony Web sites and disclose personal data. It's also pursuing phishers in the U.S., Holloway said.

■ CHINA MARTENS, IDG NEWS SERVICE

GLOBAL FACT

148

Capacity of external disk storage, in petabytes, sold last year in the Asia-Pacific region (except Japan), up from 76 petabytes in 2004.

SOURCE: IDC, FRAMINGHAM, MASS.

NTT Extends Security Monitoring to China

TOKYO

NTT COMMUNICATIONS CORP. has extended to China a service that's designed to prevent sensitive corporate information from being accidentally leaked to outsiders.

The service, which is offered alongside the Tokyo-based company's server monitoring and antivirus services, tracks networks and end-user PCs for compliance with corporate security guidelines. If an employee breaches a security policy, a pop-up warning will appear on his system.

NTT Communications, a subsidiary of Nippon Telegraph and Telephone Corp., said the compliance-monitoring service is also available in Japan and will soon be launched in other countries in Asia, Europe and North America.

■ SUMNER LEMON, IDG NEWS SERVICE

Unisys Sets Plan for IT Services in China

SHANGHAI

AN EXECUTIVE at Unisys Corp. said this month that a new software development and outsourcing services center in Shanghai is the start of an effort to expand the Blue Bell, Pa.-based technology vendor's operations in China.

Over the next three years, Unisys plans to hire 1,000 workers to staff its Chinese outsourcing operations, said T.C. Kong, managing director of Unisys Global Services China.

The outsourcing center, which opened in February, currently employs 10 workers. Over time, it will provide a range of services, including open-source software development and management of help desk operations, Kong said.

Unisys selected Shanghai for the center because of the large number of multinational companies that have operations there, he said. ◗

■ SUMNER LEMON, IDG NEWS SERVICE

Compiled by Mike Bucken.

Briefly Noted

Microsoft said it will offer unlimited technical support to licensees of its Windows workgroup server protocols in the company's latest attempt to comply with the European Commission's 2004 antitrust ruling. The EC suggested the support strategy in January. The commission called the proposal "constructive."

■ JEREMY KIRK, IDG NEWS SERVICE

Motorola Inc. has invested in two IT vendors that do development work in China. Edward Zander, Motorola's chairman and CEO, said that Motorola Ventures has invested in Shenzhen Shenxun Information Technology Development Co. and Legend Silicon Corp., the Fremont, Calif.-based parent of Legend Silicon Beijing.

■ STEVEN SCHWANKERT AND SUMNER LEMON, IDG NEWS SERVICE

Dell Inc. Chairman Michael Dell last week said in Bangalore, India, that the company plans to double its workforce in India to about 20,000 people over the next three years. Later, he said the company also plans to increase the head count at a Philippine call center from 300 to 1,400 and add 200 employees at a design center in Shanghai.

■ JOHN RIBEIRO, APRIL B. ROJALES AND SUMNER LEMON, IDG NEWS SERVICE

Novell Touts Integrated Suite at BrainShare

Users say they will look at open-source package as alternative to Microsoft

BY ERIC LAI
SALT LAKE CITY

Novell Inc. is taking a page out of Microsoft Corp.'s marketing playbook while trying to sidestep its juggernaut rival.

Users and analysts at the Waltham, Mass.-based vendor's annual BrainShare conference here last week were cautiously optimistic that the latest strategy will bear more fruit than past Novell turnaround efforts.

At the conference, Novell began touting its software as an integrated suite of products that run on its flagship SUSE Linux operating system. For instance, Novell unveiled a low-priced bundle of office and back-end applications aimed at enterprise workgroups.

Novell officials contend that the integrated SUSE Linux-based offerings — including security and identity software, management tools and desktop applications such as a new custom version of OpenOffice 2.0 — are cheaper and easier to use than Windows tools.

Longtime Novell customer Robert McInerney, North American information systems infrastructure manager at TRW Automotive Holdings Corp., said that he is "intrigued" by Novell's new version of OpenOffice. The custom tool offers more compatibility with Microsoft Office's file formats, fonts and Visual Basic scripts than the open-source version.

McInerney said the Livonia, Mich.-based auto parts supplier will look into running the software on its 9,000 PCs.

Novell has tangled with Microsoft several times over the years, coming out the worse for wear each time. This time is different, argued Ron Hovsepian, Novell's president and chief operating officer. "What the next generation of users will want is value," he said.

Novell's new Open Workgroup Suite includes the Linux version of Open Enterprise Server, its GroupWise messaging software, ZENworks, SUSE Linux Enterprise Desktop and OpenOffice. The bundle is priced at $110 per user license plus $75 per user a year in maintenance.

"Novell can clearly offer a broader scope of products than [Linux rival] Red Hat directly can," said Gordon Haff, an analyst at Illuminata Inc. in Nashua, N.H. "The strategy does seem to be moving ahead."

During the conference, Novell showed off the latest beta of SUSE Linux Enterprise Server 10, which is slated to ship in May.

The company also demonstrated the desktop version of SUSE Linux 10, which offers 3-D graphics and an integrated search engine. In addition, Novell promised to support NetWare 6.5 until 2015.

That pleased loyalists such as Edmund Weber, an IT director at the University of Regensburg in Germany, which has long stored more than 40TB of data for 30,000 students and professors on NetWare servers and doesn't plan to move to SUSE Linux until 2009. ◗

NEW PRODUCTS

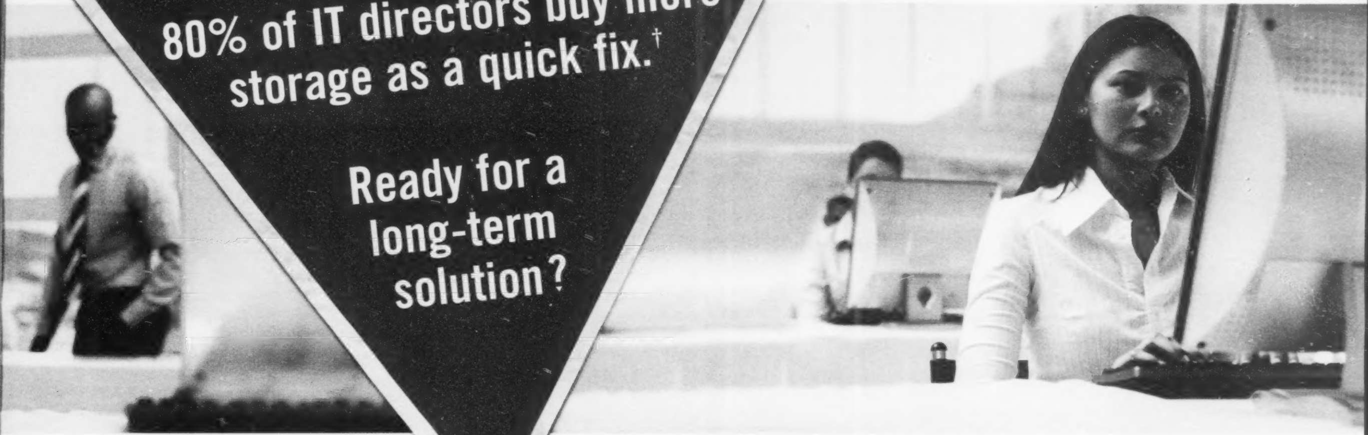
Novell's BrainShare Conference

SUSE Linux Enterprise Server 10: Will support Xen 3.0 hypervisor software for virtualization; scheduled to launch in May.

Novell Open Workgroup Suite: Includes Linux version of Novell Open Enterprise Server, GroupWise, ZENworks, SUSE Linux Enterprise Desktop and OpenOffice.

Novell edition of OpenOffice: Offers increased compatibility with Microsoft Office.

BlackBerry Enterprise Server 4.1 for GroupWise.



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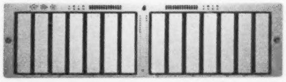

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†Storage Magazine, February 2005.

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Continued from page 1

NASA

has suffered from end-user resistance, data integration problems and a lack of oversight.

Last month, NASA's Office of the Inspector General found flaws in the management of IEMP contracts and demanded improvement. "Despite the criticality of IEMP to the agency, NASA's monitoring of the contracts was informal and inadequate to ensure that IEMP products and services were procured in a satisfactory, cost-effective manner," according to the report.

For example, the report stated that as of September 2004, five of 14 SAP-related projects, worth $16.5 million, were for services not even officially funded. The inspector general's office warned that the lack of centralized oversight could impede NASA's ability to manage the contracts, and it urged that a single set of vendor policies be established.

End-User Concerns

End users of the software have concerns about the project, said Lee Stone, vice president of legislative affairs for NASA's union, the International Federation of Professional and Technical Engineers of the AFL-CIO and the Canadian Labour Congress. The organization has been critical of the IEMP and believes that the biggest problem is the way it imposes complex accounting processes, he said.

There are also various technical problems, including integration gaps between SAP and other applications, such as NASA's workforce management system. The SAP software can be hard to use, and it's not clear that it's boosting productivity, Stone said.

"It remains unlikely that NASA will achieve a clean audit again this year, despite the fact that SAP went live back in October of 2003," he claimed.

Patrick Ciganer, the program's executive officer, didn't deny the project's complexity and the technical and personnel-related challenges. "It's been very tough, because we were an early [federal] adopter and we've been under a lot of scrutiny by oversight organizations. There have been a lot of challenges," he said.

Ciganer said that the inspector general's criticisms were largely related to procurement and that those issues haven't affected the technology. He also said that since the core financials system went live in 2003, it has generally worked as anticipated.

However, Ciganer noted, the system did require some work-arounds. It replaced 150 custom-built applications that supported NASA's various organizations, he said, and the data-conversion process was extremely difficult.

Ciganer also acknowledged that there was some end-user resistance. "This is NASA. We have very smart people. You can't just say, 'It will be better for you,' " he said.

For its part, SAP said in a statement that the overall project is a challenging one, but "in the long run NASA will benefit by becoming a more efficient agency." SAP will continue to work with NASA to "make this process design a success," it said. ▸

Continued from page 1

GM

at GM distribution centers, increasing overtime costs while workers rushed to fill orders.

"Our order variation from Monday through Friday was 21%. Monday and Tuesday, we're working overtime, and toward the end of the week, we're looking for volume," said Bryan L. Burkhardt, global director of retail inventory management at GM Service and Parts Operations.

Earlier this year, a pilot program involving 350 dealers and a regional distribution center in Jacksonville, Fla., showed the benefits of the RIM technology. Instead of operating as a batch-ordering system, the RIM system responded to actual daily demand, which cut the Monday-through-Friday order variance to 2% at that center, Burkhardt said.

More important for GM is ending the customer satisfaction problems created by its legacy ordering system.

Since the nationwide launch of RIM in August, about 1,000 GM dealers have been active on the new system. Another 3,500 will soon be active, followed by the remaining North American dealerships in 2007.

According to Donna Colorito, process information officer at GM Service and Parts Operations, GM uses ebXML as its communications protocol and BEA Systems Inc.'s WebLogic Server to distribute parts data. The system also requires interfaces built into dealer management systems.

There are about 28 dealer management system vendors, but the six largest — covering about 85% of GM's North American dealerships — have completed the RIM integration, GM officials said.

A key aspect of the system is recommending what parts to stock. GM has 1.3 million parts, and a dealership typically has 5,000 to 12,000 on its shelves, said Mike Nicholes, a parts management consultant and head of Nicholes Capital Management LLC in Portland, Ore.

Ordering misjudgments can leave a dealer without a needed part or carrying one that isn't often used. RIM recommends restocking policies for particular parts. Once the dealer agrees to a recommendation, RIM automatically fills the orders on a daily basis.

Although GM's Saturn Corp. unit has used a similar distribution system for many years, GM officials said there were "significant integration challenges" to taking a system built for a homogeneous dealer group and spreading it across all GM systems and dealers.

For GM — which lost $10.6 billion last year — the RIM system aims to make the company's supply chain more efficient and improve its bottom line, Nicholes said. ▸

Automating Parts

GM is replacing a largely seat-of-the-pants automobile parts-ordering system with its RIM automated system.

- **Uses business intelligence to propose what parts to add to dealer inventory.**
- **Calculates optimal quantity.**
- **Automatically reorders parts as they're sold.**
- **Parts that aren't sold after 12 months are automatically returned to GM.**

Aging Workers, Automation Portend IT Hiring Problems

Survey finds that qualified worker pool is shrinking

BY PATRICK THIBODEAU

Data centers are being squeezed by two seemingly contradictory trends that are slowly draining IT operations of senior employees and making it harder to hire replacements: an aging workforce and increasing automation.

That was the finding of a survey of 179 IT managers conducted earlier this year by AFCOM, an association of data center managers. The results were released last week.

Nearly half of the survey respondents said it takes at least three months to fill senior-level technical and management positions, while 38% reported that their data centers employ fewer workers than they did five years ago.

To address the implications of such trends, data center executives need to train and promote workers to senior positions so that "when you go to hire, you are not trying to hire the highest-level positions," said Leonard Eckhaus, founder of Orange, Calif.-based AFCOM. The association estimates that the pool of available senior-level data center workers will decline by 45% by 2015. "It's already more difficult than ever to fill open positions in the data center," Eckhaus said.

Retirement Trend

Meanwhile, Eckhaus said, as automation cuts data center staffs, people are hesitant to enter the IT field.

And at the same time the workforce is shrinking, more and more IT workers are approaching retirement age. Nate Viall, a Des Moines-based recruiter who specializes in finding application developers for the IBM iSeries, said 20% of the candidates in his database have 25 years or more of IT experience — more than triple the percentage in 1999.

"IT people are not working very far into their 60s," said Viall. "If they have reasonable financial stability, they are bailing out."

At the same time, IT manager Jamie Man, who heads the Indiana chapter of AFCOM, said his health care company, which he asked not to be identified, has found that younger workers aren't interested in working with older systems. "If they don't see a GUI interface, they just don't want to deal with it," said Man. ▸

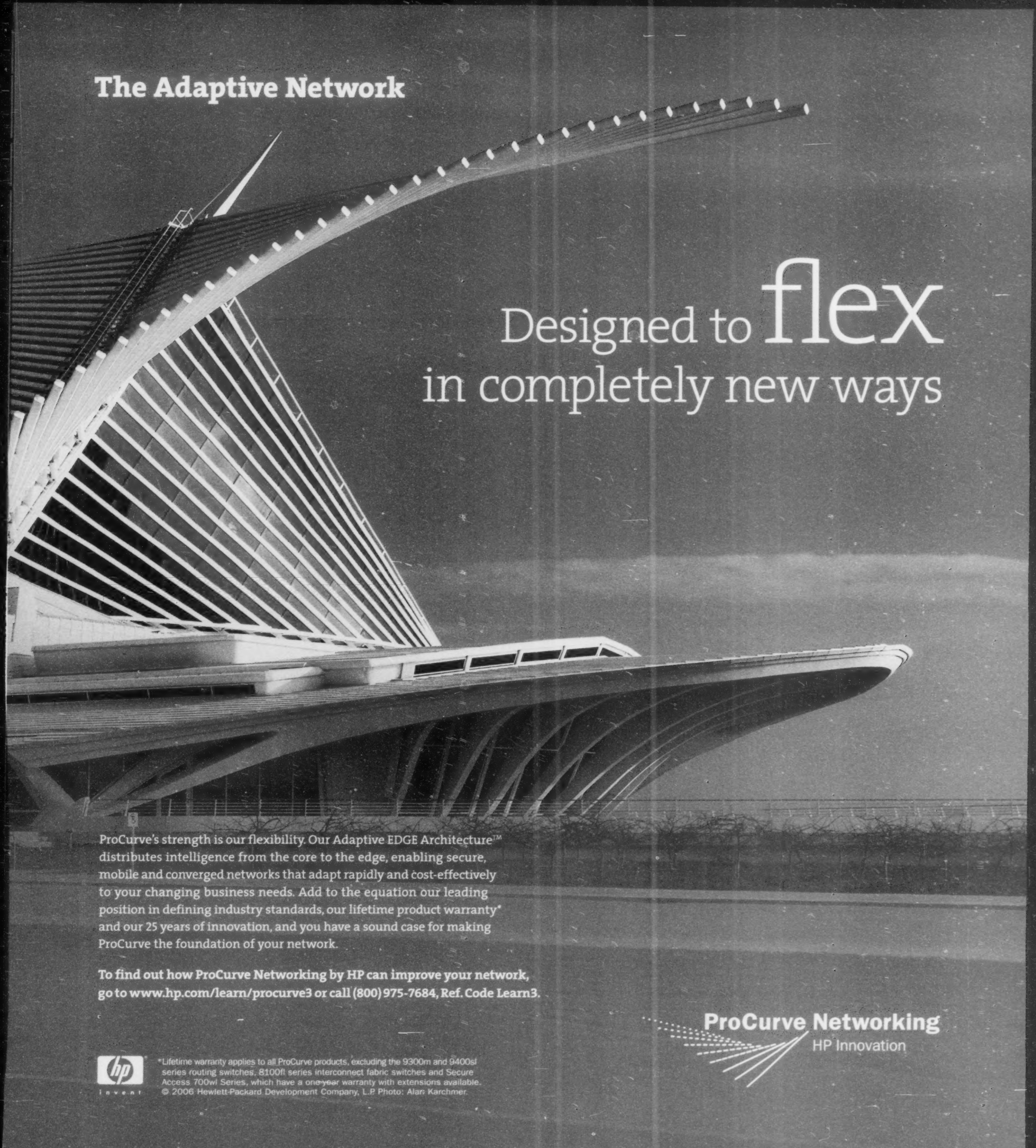
AFCOM SURVEY

Reasons for Cutting IT Workforce

Technology	74%
Automation	65%
Budget cuts	47.5%
Outsourcing	18.3%
Aging/retirement	18.3%
Other	17%
Lack of applicants	15.8%

BASE: Responses from the 40% of 179 survey respondents whose IT workforce has shrunk over five years.

SOURCE: AFCOM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To find out how ProCurve Networking by HP can improve your network, go to www.hp.com/learn/procurve3 or call (800) 975-7684, Ref. Code Learn3.

*Lifetime warranty applies to all ProCurve products, excluding the 9300m and 9400sl series routing switches, 8100fl series interconnect fabric switches and Secure Access 700wl Series, which have a one-year warranty with extensions available. © 2006 Hewlett-Packard Development Company, L.P. Photo: Alan Karchmer.

Sony Online Shifts From Oracle To Open-source Database

Switch to EnterpriseDB promises lower costs, say company officials

BY JAMES NICCOLAI AND ERIC LAI

SONY ONLINE Entertainment Inc. has started a shift from Oracle to open-source software with the signing of a deal to use database technology from EnterpriseDB Corp.

As part of an effort to cut licensing costs, the company turned to EnterpriseDB's software, which is based on the open-source PostgreSQL database, said Rick Herman, vice president of business and legal affairs at Sony Online.

Herman declined to disclose how much San Diego-based Sony Online expects to save in license fees, except to say that it will be "a substantial amount of money." Neither company would disclose the value of the deal, which was announced last week.

Oracle Corp.'s database has a list price of $40,000 per processor for the Enterprise Edition. EnterpriseDB charges an annual subscription of $5,000 for its database with the top-end Platinum support package.

David Manifold, director of database services at Sony Online, noted that the EnterpriseDB software offers Oracle compatibility, making migration easier. "Close to 80% to 90% of our applications don't need to be rewritten to use with EnterpriseDB," he said.

Starting in Back End

Sony Online, which operates an online gaming network for "hundreds of thousands" of subscribers, will initially use EnterpriseDB Advanced Server 8.1 for back-office applications, such as customer billing systems, Herman said. The database will eventually also be used for the front-end systems that run Sony Online's gaming service, he said.

The company runs more than 150 Oracle 9i databases worldwide. Herman wouldn't say how many database servers will be switched, nor would he discuss Sony Online's storage needs in detail. However, he did say that Sony Online is committed to buying "a very large number" of EnterpriseDB licenses upfront and will follow that with "another extremely large number."

Herman said that as the migration proceeds, the company will use Oracle "for the foreseeable future. What we're hoping is, as our needs scale, we'll implement more and more of the EnterpriseDB stuff we purchased."

Oracle recently launched a free version of its database, but it's "not a lot of use" to Sony Online, said Chris Yates, the gaming company's vice president of technology. Yates said Sony Online also looked at open-source databases like MySQL and Postgres. Oracle officials declined to comment about Sony's decision.

Sony Online said its initial concerns about EnterpriseDB support services were assuaged by the breadth of the vendor's support network, which includes offices in the U.S. and Asia, and one to open soon in the U.K.

Open-source still gives IT executives "heartburn" but has evolved a lot in recent years, Herman said. "If you'd told me five years ago we'd be looking at open-source, I'd have said you were insane," he said.

> **If you'd told me five years ago we'd be looking at open-source, I'd have said you were insane.**
>
> **RICK HERMAN,** VICE PRESIDENT, BUSINESS AND LEGAL AFFAIRS, SONY ONLINE

Iselin, N.J.-based EnterpriseDB also said last week that Sony Online has invested in the company, joining a round of funding that included $7 million from venture capital firms Charles River Ventures Inc. and Valhalla Partners LP.

EnterpriseDB CEO Andy Astor said Sony's investment was less than $1.5 million. ▸

Niccolai is a reporter for the IDG News Service.

Microsoft Looks to Mix It Up With Adobe

Some users see promise in design tools; others wary

BY ERIC LAI

Multimedia developer Jered Cuenco calls it the "gray-box application" phenomenon: A Web developer, befuddled by a graphic designer's computer-drawn mock-ups, delivers a prototype full of generic gray buttons, plain white backgrounds, oversized headlines and other crimes against visually interesting user interfaces.

"It just drives designers up a wall," said Cuenco, who works at Avenue A/Razorfish, an interactive design firm in Portland, Ore. Such results reflect the typically clumsy workflow between designers and developers, Cuenco said. He put part of the blame on the fact that the software tools used by the respective camps don't talk well with each other.

Microsoft Corp. hopes to solve that problem with its upcoming Expression suite of Web design software. And at its Mix 06 conference in Las Vegas last week, the vendor worked to convince attendees — most of them loyal to Adobe Systems Inc. products such as Photoshop, Flash and Dreamweaver — to add Expression to their toolboxes.

The Expression software, which could be ready for release by year's end, will let designers work in drag-and-drop environments while producing underlying code in the Extensible Application Markup Language (XAML). Then they will be able to exchange the XAML code with developers creating business applications, portals and services for Windows Vista, said Microsoft officials.

Cuenco said in advance of Mix 06 that although Adobe's software may be great for developing Web-based applications for consumers, it can't compete with Vista's Windows Presentation Foundation (WPF) framework for developing graphics-enhanced applications for business users.

"The things you can do in WPF, Flash can't do," Cuenco said. For example, with Expression, developers will be able to layer business applications with user interfaces that can be easily swapped out or customized by users, he said.

The combination of Vista, WPF and Expression could radically improve the usability of business applications, Web portals and miniapplications such as "gadgets" and "widgets," said Bola Rotibi, an analyst at London-based consulting firm Ovum Ltd.

Designs on Adobe

Microsoft's Expression suite will include the following design and development tools:

- **Graphic Designer:** Offers features similar to Adobe's Photoshop and Illustrator tools. On its fifth test release.
- **Interactive Designer:** For building multimedia user interfaces. In testing now.
- **Web Designer:** A competitor to Adobe's Dreamweaver software, for producing Web sites. On its first test release.
- **WPF Everywhere:** Runtime code for reusing graphic elements, akin to Adobe's Flash technology. Initial test release due in Q3.

"The Expression tools are pretty sophisticated," Rotibi said. "Any CIO would be foolish not to have at least one eye on what's coming and [be] thinking, 'How do I make the most of this?' "

But some potential users were much less sold on the Expression tools than Cuenco is. Jeffrey Chiang, an interactive designer at design firm Gotomedia Inc. in San Francisco, said the user interface of the Expression Graphic Designer tool needs a lot of work to keep designers who are familiar with Adobe's products from getting frustrated.

Even if the new tools work as well as Microsoft claims they will, the company has its work cut out for it to lure users away from Adobe's tools, said Keith Cutcliffe, a Web developer at ProAssurance Corp., a medical liability insurance provider in Birmingham, Ala.

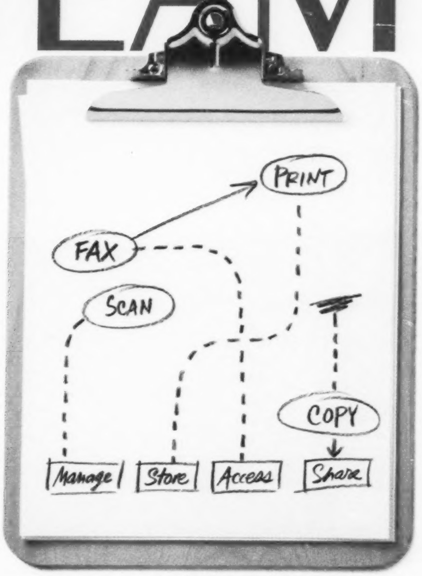
"I don't know how they're going to do that," Cutcliffe said at Mix 06. He noted, though, that there are many more Web designers using PCs now than there were a decade ago.

Joe Wilcox, an analyst at JupiterResearch in New York, agreed that although developers may see the benefits of adopting Expression, designers may not be so quick to clamber on board.

"Microsoft is operating under the presumption that when the developer and the designer work together, the developer is the lead," Wilcox said. "I'm not sure I buy that." ▸

Elizabeth Montalbano of the IDG News Service contributed to this story.

TEAM PLAYER



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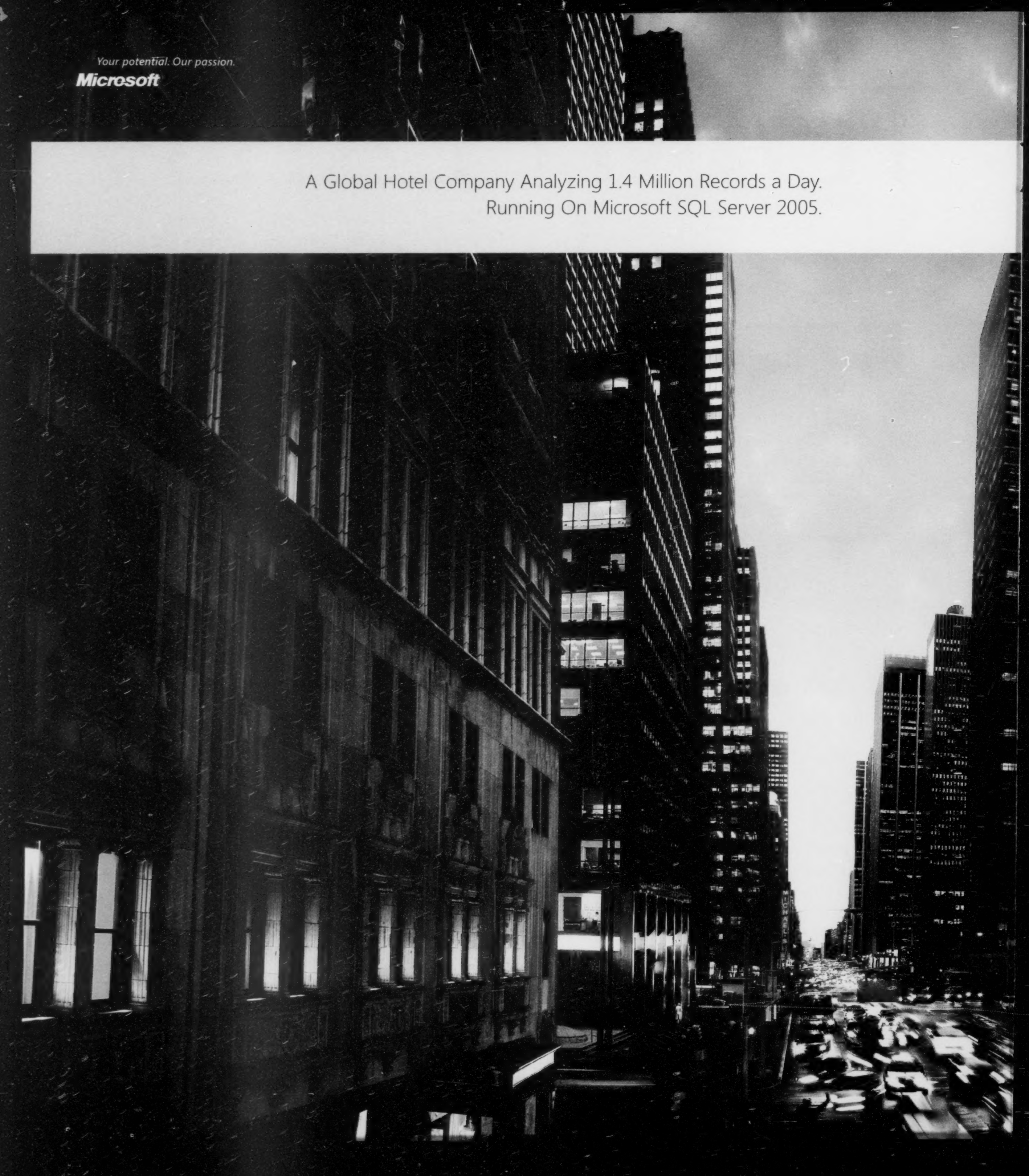

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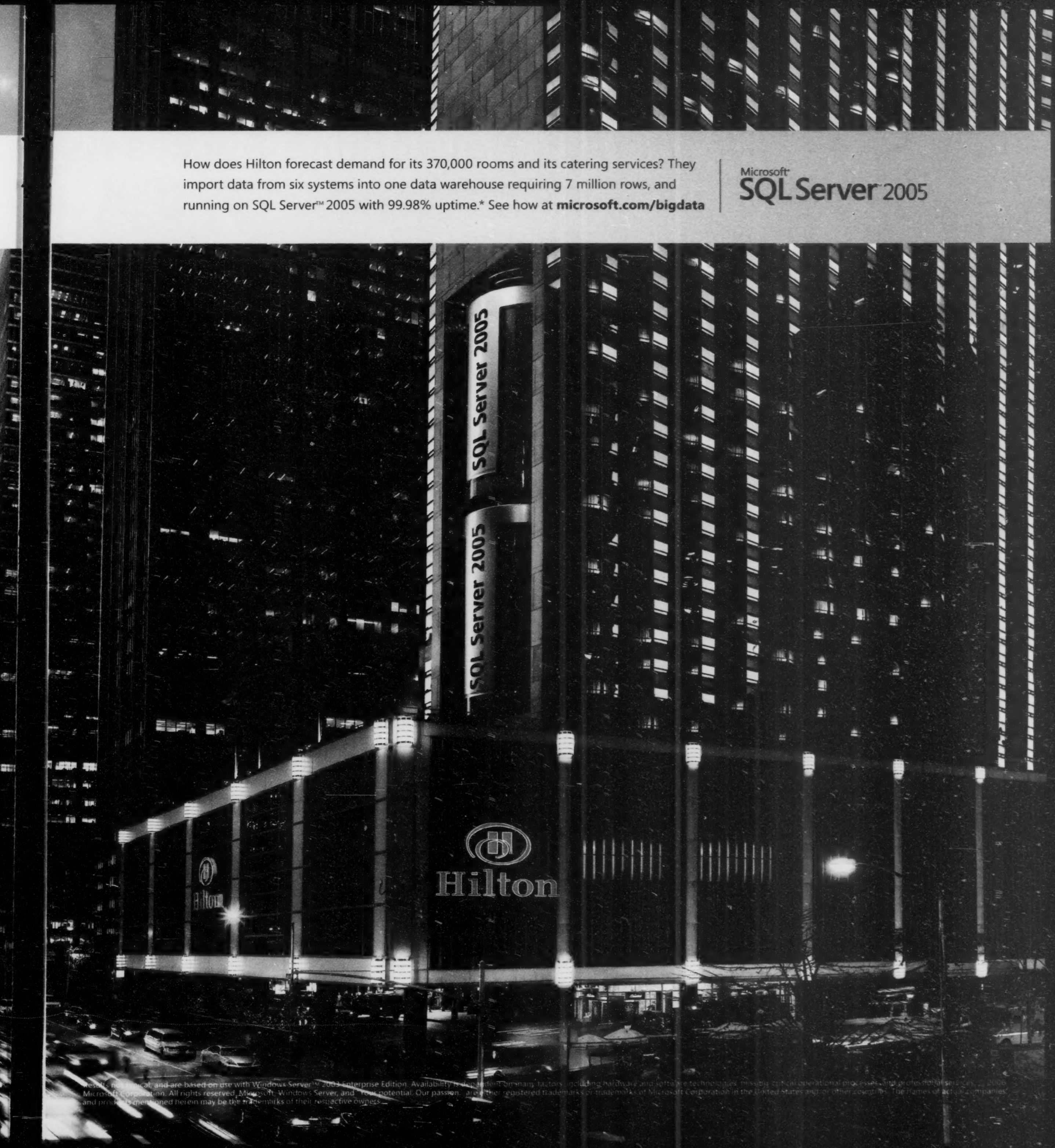

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New Company Formed to Develop Geac BI Tools, Financial Apps

BY HEATHER HAVENSTEIN

Golden Gate Capital Corp. completed its $1 billion acquisition of Geac Computer Corp. on March 14 and last week launched a company called Extensity Inc. to further develop and sell Geac's financial applications and business intelligence tools. Geac's enterprise planning software line was shifted to Golden Gate-funded company Infor Global Solutions. **Ken Walters**, *president and CEO of Atlanta-based Extensity and former president and chief operating officer at Infor, recently discussed his plans for the business with* Computerworld.

Q&A

What is the focus of the new company? Our focus is going to be on the total needs of the finance groups [in companies] worldwide. They are being called on more and more to provide actionable, real-time data into the business operations, along with [managing] Sarbanes-Oxley and regulatory requirements. They need to be able to pull information out of the financial systems [and] provide that data to the business operations to allow them to drive decision-making on a day-to-day basis. Extensity is very well positioned to take advantage of those financial transactions, from the back office to the measurement systems and the business intelligence systems that are being put into place.

How will Extensity differentiate itself from the many other vendors of BI tools? Golden Gate Capital has developed a strategy around assembling specific solutions around specific marketplaces. We have the backing and capability to not only develop internally the products we currently have, but the capability to do acquisitions. We're starting out at about $325 million in revenue — very profitable — with a lot of recurring revenue and with a great opportunity to do acquisitions and grow organically. We come out of the blocks as a very global company with strong reach around the world.

What are your short-term and long-term product plans? Today, we have the MPC [performance management] product from the Comshare acquisition that is focused in budgeting, planning and analysis. It is a fully integrated platform.

Our main focus going forward will be providing a fully integrated suite of products [to] companies in the $200 million to $2 billion range, and we have a great opportunity to look at divisions in Fortune 100 or Fortune 500 companies. ▸

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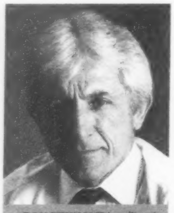
DON TENNANT

H-1Being Professional

IF YOU WANT to keep yourself and your company competitive in an economy that's getting more global with every sunrise in the East, to what should you devote your energy? What causes or initiatives should you champion?

For far too long, far too many in the U.S. IT community have taken an approach that's disturbingly '90s-Microsoftesque: Rather than going head-to-head with your competitors with strength and confidence in the value of what you have to offer, you focus on peripheral measures aimed at eliminating your competitors so you don't have to deal with them.



DON TENNANT is editor in chief of *Computerworld*. Contact him at **don_tennant@computerworld.com**.

For years that mind-set has pervaded our response to the competitive threat posed by foreign IT workers: We don't like having to compete with these people, so let's devote ourselves to making them just go away.

What a waste. What if all the energy that has been expended on restricting H-1B visas had instead been directed toward raising the value of what it is we have to contribute? Do we even know how to go about accomplishing the latter?

IT executives with successful global operations do. They know it's all about innovation.

I recently spoke with Larry Buettner, CIO at automotive fleet management services provider Wheels Inc., about the challenges he's confronting in synthesizing IT operations in 10 countries in Europe. Buettner, a 2006 *Computerworld* Premier 100 honoree, was reflecting on what it takes to be competitive in that kind of environment. Top of mind, he said, is this: "How do you continue to innovate in dealing with so many of the complexities of these different countries?" He's not worried about how to deprive anyone else of the opportunity to compete. He's focused on how to continue to innovate.

As cool as that is, it's one thing when one CIO and one company gets it. It's something else altogether when a large, high-profile organization of technology professionals gets it.

In case you missed it, *Computerworld*'s Patrick Thibodeau reported last week that IEEE-USA has announced plans to create what it's calling an "Innovation Institute" as part of an ongoing program to provide advanced training to U.S. workers. With a mission to keep U.S. employees competitive in the global technology job market, the institute is being aimed at high-potential students who can learn from one another, according to IEEE-USA President Ralph Wyndrum.

IEEE-USA, a longtime foe of H-1B visas, remains staunchly opposed to raising the current cap of 65,000. A bill being debated by the Senate Judiciary Committee that would raise the cap to 115,000 would only make "a bad situation worse," Wyndrum says.

Whether you agree with that assessment or not, you have to give Wyndrum and his organization credit for at least making some positive proposals beyond the knee-jerk rants that we typically hear from H-1B opponents when an increase to the cap is proposed.

Aside from creating the Innovation Institute, IEEE-USA has demonstrated that its opposition to H-1B visas is not driven by a strategy to deprive foreign workers of the opportunity to compete for technology jobs in the U.S. The organization's position is that a preferable course of action would be to make it easier for foreign workers to gain permanent residency in the U.S.

It's difficult not to respect that position. It's one that was eloquently articulated in a column written for *Computerworld* in November by Gerard A. Alphonse, the 2005 president of IEEE-USA and a fellow of the IEEE. Alphonse should know what he's talking about.

He emigrated here from Haiti. ▸

Don Tennant

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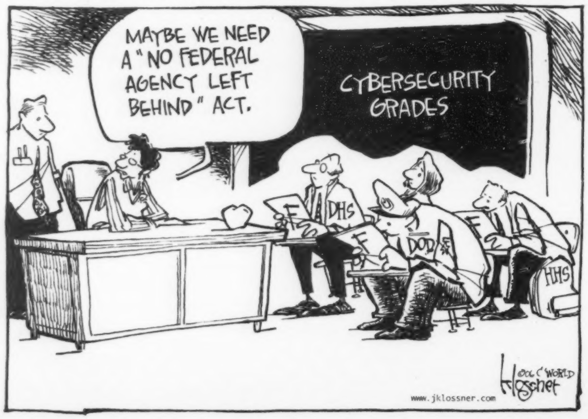

BRUCE A. STEWART

Know Why You Are Reorganizing

IN THE SPRING, a CIO's heartstrings are pulled by the lure of — reorganization.

In my travels this winter, I saw a number of large corporations that are considering far-reaching organizational changes. IT groups are being merged with business service groups. Hybrid organizations, filled with centers of excellence and special offices, abound. People are being moved to and from business areas, and the perennial process models for IT are being dusted off and brought up to date. Silo-busting talk fills the air.

If this were just talk, there would be no harm in it. Unfortunately, some of the corporations are actually going to implement changes. And if the following types of changes are made without adequate attention to some important details, the companies will take a productivity hit, fail to meet targets, alienate their clients in the business and possibly cause a few heads to roll.

BRUCE A. STEWART is a former CEO and onetime senior vice president and director of executive services at Meta Group Inc. He is now an executive adviser in Vancouver, British Columbia. He can be contacted at **bruce@bastewart.com**.

Centers of excellence: This model for providing specialized support for things like architecture continues to gain ground in the reorganizing imagination. But centers of excellence often try to take charge of things outside their domain. These units should support other activities; if they try to set the direction, they can undermine normal IT-client relations. How many voices is your IT group speaking to its clients with? Are the messages consistent? Who's really driving strategy?

Special offices: Consolidating activities within program or project management offices is also finding favor. But special offices must not become stumbling blocks to getting things done. If they aren't producing more value than the organizations they replaced, they're not worth the overhead of maintaining them. Are you measuring the value produced?

Process-driven models: IT organizations continue to organize around processes. But IT professionals deal on a day-to-day basis with others who share their domain or technical expertise. Functional silos may look old-fashioned, but they recognize this aspect of staff support, development and satisfaction. Defining and using processes does not necessarily imply organizing around those processes.

Shifting people to or from the business: Business analysts are constantly moving, to or from the business. It doesn't seem to matter how such shifts are organized, though; it's an unhappy existence. Recognize that there's no good answer to the question "Which resources belong in the business?" and learn to make it work.

Breaking the network of relationships: In any organization, there is an existing network of relationships. Some people act as information hubs; they are the go-to people to find out what's going on. Others act as monitors, gatekeepers or coordinators who ensure quality and timely process execution. Reorganizations often shift these key people so that processes break or key information ceases to flow. The informal network that rules "how it gets told" or "how it gets done" is as important as the formal structure.

Recognize that a successful reorganization is one in which productivity increases and the adjustment period is minimal. If you're planning a reorganization, ask yourself these questions:

- What problem am I trying to fix? What am I giving up by fixing it this way?
- What message does the new structure send to my clients? To my IT organization? How will this change behavior?
- Does this new organization increase my team strength and depth?

Reorganizations can unleash a wave of success. Most don't. Make sure your next one stands a fighting chance to achieve its goals. ◆

* * *

JOHN D. HALAMKA

Injunction Dysfunction

WHILE I write this column on my BlackBerry, I'm reflecting about the effect that Research In Motion's settlement with NTP will have on the IT industry.

JOHN D. HALAMKA is CIO at CareGroup Healthcare System, CIO and associate dean for educational technology at Harvard Medical School, chairman of the New England Health Electronic Data Interchange Network, CIO of the Harvard Clinical Research Institute and a practicing emergency physician. Contact him at **jhalamka@caregroup.harvard.edu**.

From a CIO's perspective, the most disturbing part of the case was that the judge could have issued an injunction that would have disrupted the most popular wireless messaging technology in use. Businesspeople, physicians, lawyers and many others could have lost the mobile connectivity they have come to depend on.

The judge in the case wanted the parties to settle, but it was clear that he was ready to issue an injunction if that didn't happen. While that may be appropriate in a claim of patent infringement, in this case an injunction would have had a wide-ranging and disruptive impact on a critical technology service. Never before have I seen such alarm in the medical, business and legal communities over a pending judgment.

We have to realize that similar cases could arise in which the judge doesn't hesitate to issue an injunction. Consider the potential harm that would result if an injunction were issued in the SCO case or to safeguard the patents that Microsoft claims to hold covering aspects of Linux. Suppose businesses had to stop using Linux next week or face potential liability for intellectual property infringement. The impact on business would be substantial.

Apart from losing the use of a critical operating system, businesses that would suddenly find themselves barred from using Linux are likely to have licensed and implemented hundreds of thousands — perhaps millions — of dollars worth of software that runs on the operating system. They would lose the use of that software and incur the expense and delay of migrating to another operating system. The threat of an injunction in the BlackBerry case may have melted away, but that threat was just the tip of the iceberg.

RIM has agreed to pay NTP $612.5 million. Given that kind of money, we can expect that claims of patent infringement will rise. Companies will be formed for the sole purpose of litigating patents. Seemingly worthless older patents will be given new life w hen related products or services are offered successfully in the marketplace. The *MercExchange v. eBay* case is one chilling example.

I have a personal example. In 1983, Steve Wozniak's mother asked me to create a technology to celebrate his birthday. I came up with the electronic greeting card and patented the use of electronic multimedia to deliver greeting cards over computers and networks. (Patent No. 4,965,727, issued Oct. 23, 1990, covers the process, and No. 4,951,203, issued Aug. 21, 1990, covers the product.) The patents cover wide-area networks, such as the Web, even though they were issued years before the browser was invented.

I have little interest in enforcing these patents; to date, most if not all e-greeting cards are free, and the royalty percentage from even a billion free transactions is still zero. However, it's patents like these that will be dusted off and used in potentially disruptive ways.

Because this is sure to happen, it's essential that we as CIOs and IT managers ensure that every technology contract we sign has appropriate protections for intellectual property infringement. I may gain only partial protection from legal issues by doing this, but I'm reviewing all my contracts and thinking about ways to mitigate my business risk. ◆

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www.computerworld.com/columns

READERS' LETTERS

A Pox on Flash

THE JAN. 16 article about Macromedia's Flash [QuickStudy, Jan. 16] incorrectly describes Flash as a relatively open format. Flash is in fact quite proprietary.

Macromedia will allow you to download the specs for Flash files only if you agree to use the information to add an "export to Flash" feature to your software and not build a Flash player for any other platform.

Most of the open-source Flash players that are currently available are only at the alpha development stage, and the ones that don't fit in that category are using very old format data, dating back to the Flash 4 days (the current version is Flash 8).

Tony Hoover
Salina, Kan.

FLASH HAS always meant slow loads and ugly graphics.

I believe that I have spent more time waiting on Flash than I have spent dealing with spam. Certainly Flash has given me more headaches.

A pox on it!

Kai Hintze
Salt Lake City, hintze@aros.net

Not the Fax, Ma'am

USING FAXES to transmit patient information is inherently insecure ["Fax Mix-ups Send Patients' Data to Wrong Company," Feb. 13]. The people involved in making that decision should be looking for other work, preferably outside the IT, medical, financial and security fields.

Jim Kennedy
IT manager, St. Marys, Ga., jimkennedy@alum.mit.edu

Virtualization Offers Real Benefits

I JUST COMPLETED a virtualization project for exactly the benefits C.J. Kelly dismisses ["I'll Make Do With My Not-So-Virtual World," Security Manager's Journal, Jan. 30]. I replaced seven physical servers with two running seven virtual ones. Because either box can run the full load, we can be up and running in no time on one box if the other fails. If I outgrow two physical servers, I can maintain full redundancy as long as I can always run all my virtual servers on one less than my total physical servers.

Everyone's environment is different, but for my company, virtualization was more about security and recovery than it was about utilizing capacity better, though we also reaped that benefit. I was in a situation where several of my old servers were going to have to be replaced, and I needed to add a server for a new application. I spent less money this way. When Kelly reaches that point, she should rethink virtualization.

Scott T. Smith
IS manager, Arctic Express Inc., Hilliard, Ohio

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 1 Speen Street, Framingham, Mass. 01701. Fax: (508) 879-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

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KNOWLEDGE CENTER STORAGE

03.27.06

Backing Up the Virtual Machine

Server virtualization demands a multilayered approach to storage, say users like Suffolk University's Praneeth Machettira. **PAGE 40**

CAREERS

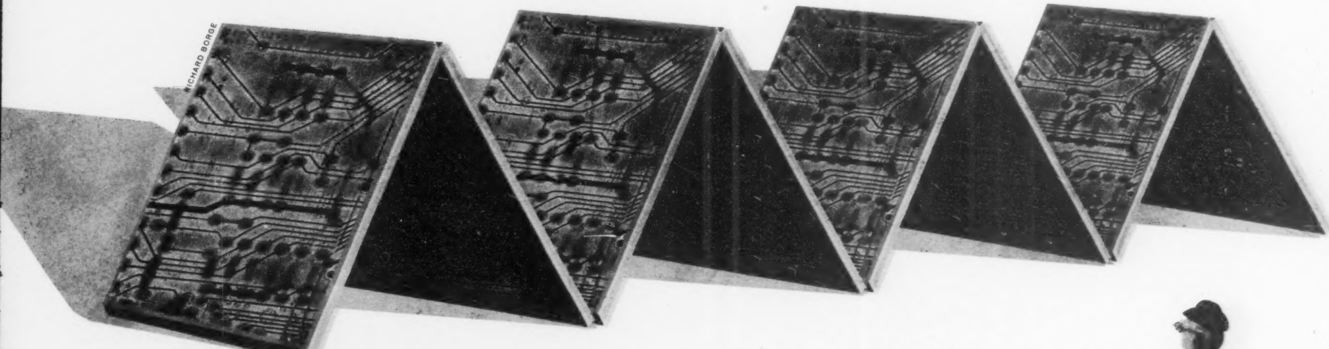
The Storage Specialty

The data explosion is bringing more status — and higher salaries — to storage workers. **PAGE 48**

OPINION

Storage-free Zone

Ismael Ghalimi's Office 2.0 project is a radical experiment to work without locally stored applications and data. Mark Hall (left) asks: Is it a crazy idea? **PAGE 50**



RICHARD BORGE

New Wrinkles In Storage

SPECIAL REPORT

The latest techniques for encryption, backup and provisioning

EDITOR'S NOTE

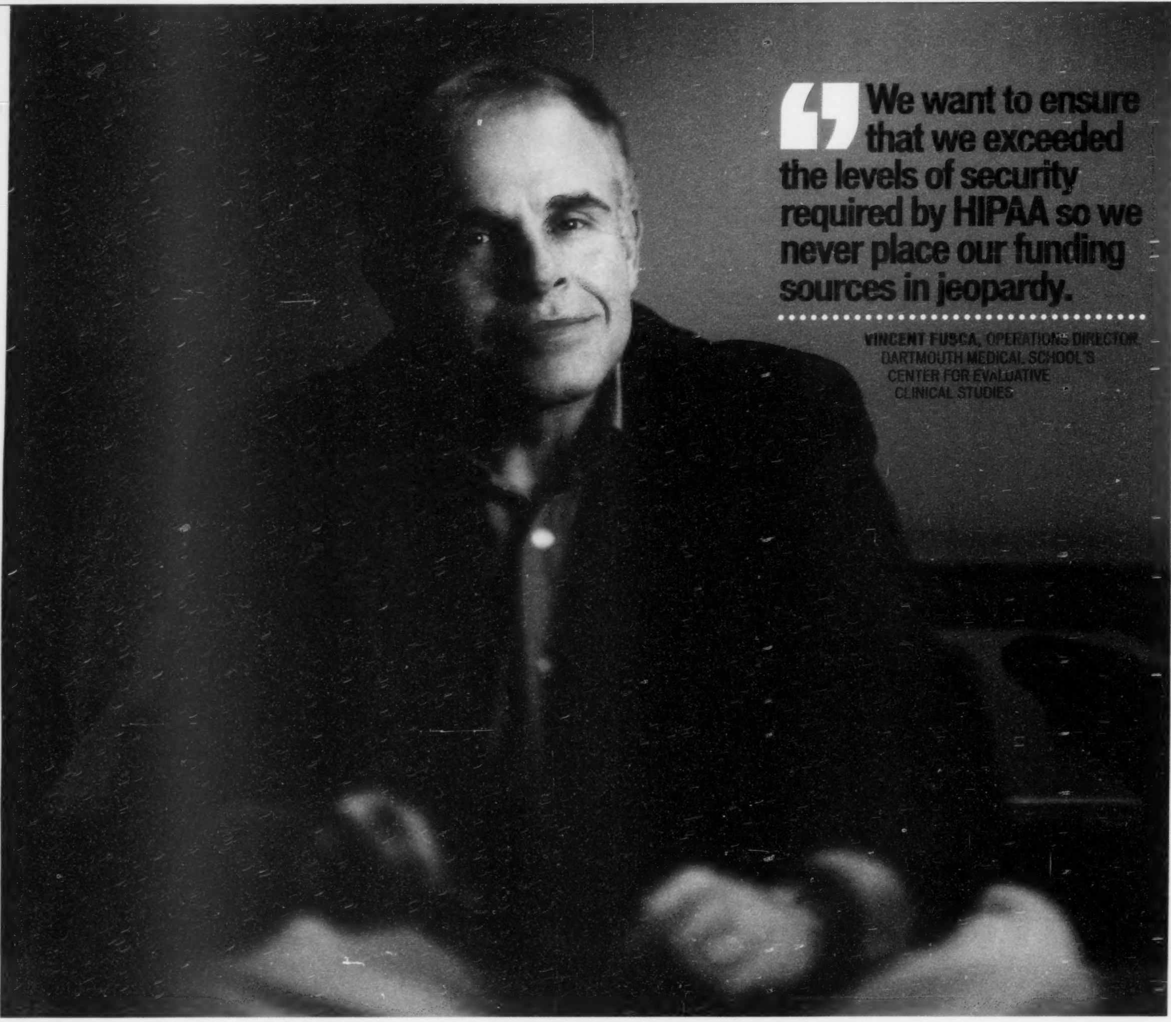
F INALLY, corporate chieftains are beginning to understand that business runs on information. Information properly exploited can yield competitive advantage. Information properly stored can be retrieved when needed for business, legal, regulatory compliance or disaster recovery purposes. And information properly protected will keep the company's name from joining the news media's growing list of privacy and security breaches.

That's why data storage – once the unsexiest of topics – has jumped into the top tier of IT issues in the past year. Hurricanes, lawsuits, regulations and a rash of lost magnetic tapes will do that. One sign of the growing stature of the storage function is that it's now an IT career specialty with premium pay (like security); it's no longer just an add-on chore for mainframe system administrators. Today, storage administrators earn an average salary of $80,500 to $95,000 if they have lots of experience (see page 48). SAN specialists are also in particularly high demand.

With that new status comes more responsibility. This special report is intended to keep IT directors up to date on the latest developments in encryption, backup and provisioning. Now that another hurricane season, and possibly more privacy legislation, is just around the corner, there's little margin for error.

Information storage is becoming a surprisingly high-profile business function and might even be discussed at the CEO or board level. That development has several upsides and downsides. Soon CEOs will be asking how securely their business information is stored, and you'll want to have a good answer. ◗

Mitch Betts is Computerworld's *executive editor. Contact him at mitch_betts@computerworld.com.*



STEVEN VOTE

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Safe and Sound

With a dizzying array of new encryption options on the market, which one is right for you? **By Stacy Collett**

VINCENT FUSCA trusts his staff. But he can't take any chances. It's all about the money.

As operations director at Dartmouth Medical School's Center for Evaluative Clinical Studies in Hanover, N.H., Fusca oversees the handling of nearly 7TB of raw medical data from the Center for Medicaid and Medicare Studies. Programmers aggregate and refine the data down to data-analysis sets that researchers use to publish some of the most comprehensive comparative medical research in the U.S.

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So two years ago, the center purchased two network appliance servers that keep data encrypted until researchers request the information on their secure desktops. The data is then sent on to backup tapes in an encrypted form.

"We want to ensure that we exceed the levels of security required by HIPAA so we never place our funding sources in jeopardy," Fusca explains.

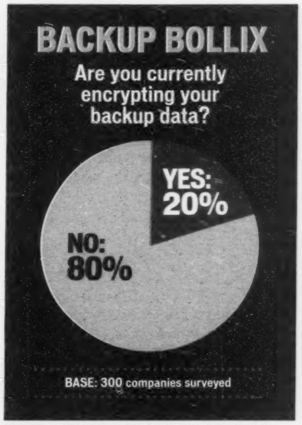
On the Radar

Like it or not, encryption will become part of most data at rest.

Companies of all sizes are exploring encryption because of a real threat of losing data or having it stolen, and because of government regulations such as the Sarbanes-Oxley Act, the Gramm-Leach-Bliley Act and HIPAA, which require protection of Social Security numbers, credit card data and other sensitive information. While encryption isn't required, it can provide an easy, blanket solution.

"First, we had the market leaders. Now, we're getting the midsize companies realizing that personal confidential information regulation is there to stay," says Eric Ouellet, a privacy and security analyst at Gartner Inc. Ouellet says he saw a tenfold increase in customer calls about encryption technology beginning in January 2005.

Security threats aren't confined to the backup tapes stored at off-site facilities anymore, though last year's highly publicized losses of tapes belonging to Bank of America Corp., Time Warner Inc. and Citigroup Inc. put a spotlight on the need for encryption. Laptops and databases need encryption too.



SOURCE: GLASSHOUSE TECHNOLOGIES INC., OCTOBER 2005

Still, organizations are reluctant to use encryption. In the Ponemon Institute's 2005 National Encryption Survey, only 4.2% of the nearly 800 companies polled said they have enterprisewide encryption plans. The primary reasons cited for not encrypting sensitive or confidential information were concerns about system performance (69%), complexity (44%) and cost (25%).

It's true that encrypting tapes using some types of backup software increases backup times, consumes more storage space and costs more money. But those arguments may be losing steam. A dizzying assortment of products were introduced last year, promising to make encryption better, smarter and faster. The bad news: A single encryption method can't be used in moving data from a laptop to off-site storage in most cases. The good news: Decryption has become simpler, and backup times have improved significantly, especially when using encryption appliances.

A successful encryption plan involves identifying the right data to encrypt, choosing only the encryption technologies that you need and managing encryption keys effectively.

"There is still no right way to apply encryption," says Jon Oltsik, an information security analyst at Enterprise Strategy Group Inc. in Milford, Mass. "It depends on what you perceive the risks to be and where the money is to solve the problem. Focus on figuring out one or two technologies that will take care of the biggest chunk of issues."

Here's a look at some of the newest encryption technologies.

Back-End Appliances

Companies that want blanket encryption coverage on the back end before it goes to backup should consider appliances that sit between servers and storage systems and encrypt the data as it moves back and forth, says W. Curtis Preston, vice president of data protection at GlassHouse Technologies Inc., a storage services company in Framingham, Mass.

Specialized encryption appliances like Decru Inc.'s DataFort, which was acquired by Network Appliance Inc. last summer, and NeoScale Systems

Encryption Decrypted

A glossary of common storage-encryption terms:

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ENCRYPTION APPLIANCE. This hardware sits between servers and storage systems and encrypts data as it moves back and forth. Many of these appliances can run in SAN, NAS, iSCSI and tape infrastructures. They encrypt data at close to wire speed with very little latency. In comparison, encryption software on servers and in storage systems slows backups.

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EDGE ENCRYPTION. This includes encrypting data at the point of entry on laptops, handhelds and desktop PCs. Basic encryption that requires a username and password offers little protection, but it's better than nothing, say industry watchers. A global key-management system for Windows offers better protection. Some laptop manufacturers are incorporating encryption capabilities in new models.

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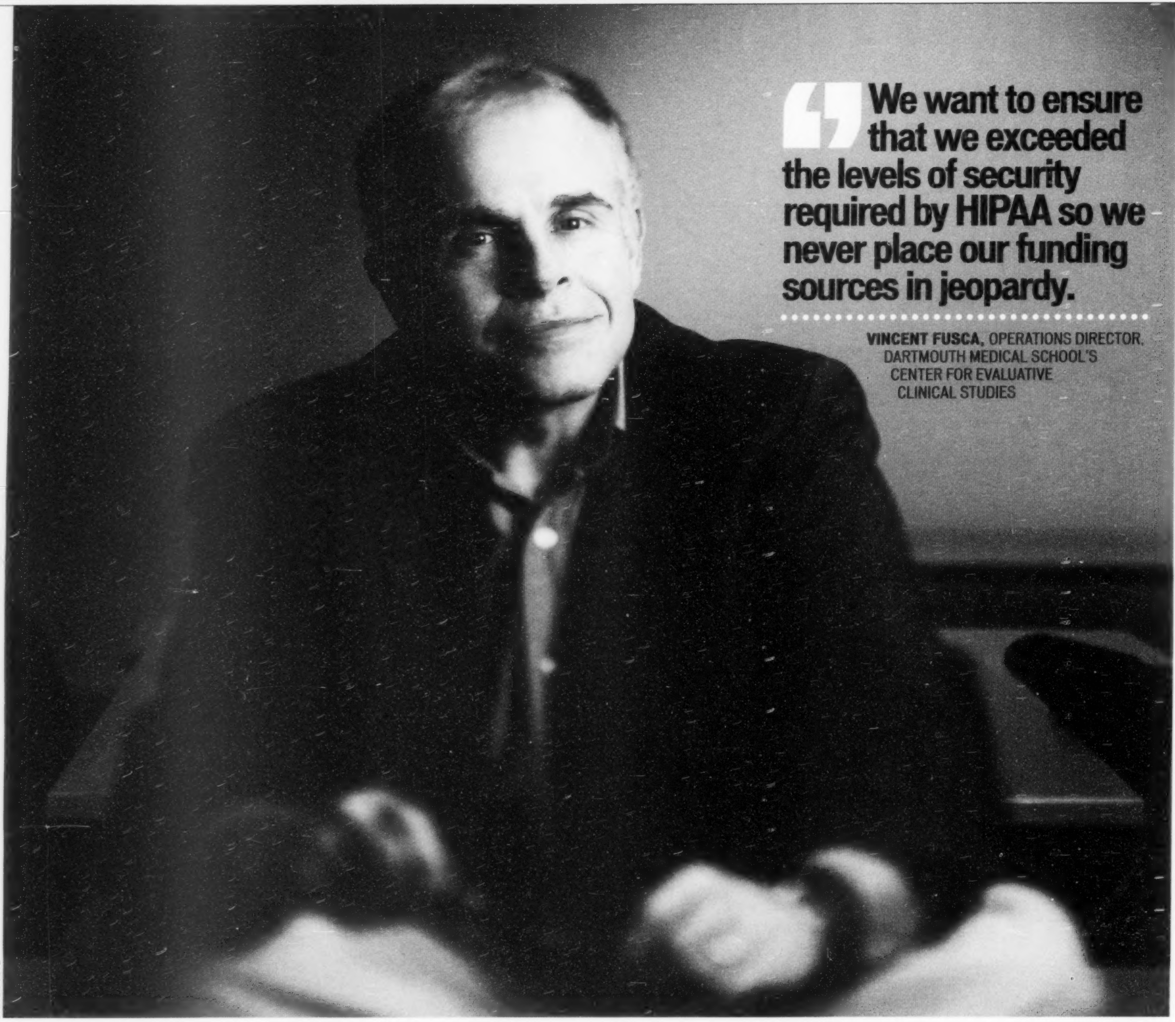

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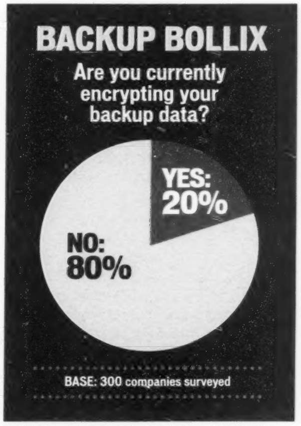

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Inc.'s CryptoStor can run in storage-area network (SAN), network-attached storage (NAS), iSCSI and tape infrastructures. They encrypt data at close to wire speed, with little latency. Both vendors have also developed versions of their products that will encrypt backup tapes. Decru's offering encrypts NetApp storage, as well as EMC Corp., Hewlett-Packard Co., Sun Microsystems Inc. and IBM storage.

Fusca says encrypting and decrypting data goes unnoticed by users at Dartmouth. "When they get up on the analytical servers and start drawing data through either the tape library or the electronic storage through the DataForts, it is relatively transparent, and there are no discernable delays in accessing the data," he says.

Key management has been simplified. "Once we identify the appropriate client stations that are on the virtual private network that can draw requested encrypted data into their 'cryptainer' [a device that stores decrypted data on the desktop], it's relatively fast and painless for them," Fusca adds.

Appliances also trump software-based encryption at the database level when it comes to compression. Software-encrypted data can't be compressed, which is a tape-drive space savings of 1.5 to 1. "These hardware devices have a compression chip in them, so they compress before they encrypt," Preston says.

Library-based Tape Encryption

In the highly competitive microprocessor market, protecting intellectual property is a serious concern, especially when sensitive data goes to an off-site storage facility.

At Advanced Micro Devices Inc.'s Longmont Design Center, IS manager Tom Dixon has been evaluating the beta version of Spectra Logic Corp.'s BlueScale environment for three months. Spectra Logic is one of two library tape vendors that have recently incorporated security into tape drive and tape library hardware. Quantum Corp.'s proprietary DLTsage architecture also offers a tape security feature at the drive level.

"Library-based encryption is a good idea for firms that need to lower the risk associated with sending tapes off-site," wrote analyst Galen Schreck in a January report for Forrester Research Inc.

The Spectra Logic product performs data encryption within the library using an enhanced version of its Quad Interface Processor board. Three months into his evaluation, Dixon says the hardware was "fairly easy" to set up. "You don't have to do anything on the host," he says. "They set up the library, and you set up your keys. That's the biggest headaches. We haven't even talked about that yet."

The hardware's encryption keys are managed within the library and can be exported via a Universal Serial Bus flash drive or via an encrypted e-mail. The keys can then be imported into another Spectra library or used within a software decryption utility, in case no library hardware is available.

Library-based security has two big benefits over software-based alternatives, according to Schreck. First, there are no performance penalties. By embedding encryption in the tape subsystem, vendors can use encryption coprocessors to process the data stream at wire speed.

Second, security functions are completely transparent to the software. To outside applications and servers, they behave like just a regular tape library. No external software or operating system support is necessary.

But it also means that the tape vendor is completely responsible for managing security. So customers should look for products with strong key-management features, like quorum-based recovery, integration with backup and recovery tools, and automated replication of keys to an escrow service or tape library at a disaster recovery site.

Laptop and 'Edge' Encryption

While encryption efforts focus on back-end and off-site storage tapes, Preston says fewer companies are implementing edge-level encryption methods, such as encrypting data on laptops. What's more, basic laptop encryption offers little protection.

"Most people use a Windows name and password. That becomes the key to encrypt the data. If someone actually stole your laptop to steal your data, that key would not stop them for very long," Preston says. A harder-to-crack, global key-management system for Windows exists as part of Microsoft's Active Directory infrastructure, "but not everyone uses it," he adds.

Laptop manufacturers like Lenovo Group Ltd. are incorporating encryption capabilities into their systems, and Microsoft Corp. will add encryption capabilities to the upcoming Vista version of its Windows operating system.

Don't Encrypt Everything

When it comes to assessing what constitutes "sensitive" data, most companies will find that there are only 8 to 12 bits of information per record, on average, that need encryption, says Gartner's Ouellet. Depending on the type of business, this can include Social Security numbers, credit card information, financial records, health information, intellectual property documents or information about sexual orientation.

"Once you've identified what those bits are, you can choose what solution gives you the biggest carpet covering

Have a Key-Recovery Plan

WHILE ENCRYPTION products can improve security, they also introduce additional management tasks, especially for companies using multiple encryption products. Always include a strong key-management approach, including quorum-based recovery.

"Encryption products that don't provide a means of recovering keys are asking for trouble, particularly in a disaster recovery scenario where files may be lost or disorganized," Forrester analyst Galen Schreck wrote in a January report. "Quorum-based recovery allows a certain number of parties . . . to present their credentials and recover encryption keys."

Also, tape libraries shouldn't have to maintain the mapping of encryption keys to tape volumes. It adds another point of management and complicates long-term key escrow.

It's also important to automatically replicate keys to an escrow service or tape library at a disaster recovery site for fast data recovery in the event that the originals are lost, Schreck says.

And don't forget the human aspects of key management, says Eric Ouellet, an analyst at Gartner. "You may actually have controls that already exist that you can leverage, like better authentication or better separation of duties, or better access control" with databases or applications, he adds. "If you focus on those areas, then you don't necessarily need to deploy encryption everywhere."

Employee access and separation of duties should be a top priority.

"Maybe the encryption technologies work fine, but does someone have access to a file that they shouldn't have access to? Or do they have a key to get access to that data? If so, you've just compromised your system," says Ouellet.

What's more, systems administrators should not be system users, and auditors should not be able to grant themselves access or privileges. "Anything that would cause a conflict of interest would not be allowed," he says.

– STACY COLLETT

How Long Will It Be Safe?

EVEN WITH ALL the new encryption technology, vulnerabilities still exist. Encryption keys once thought to be safe, like MD5, SHA-1 and SHA-256, were eventually cracked. How long will the current 3DES or AES 256-bit encryption keys last?

"With any encryption algorithm, at some point there will be enough number-crunching capacity to work through it," says W. Curtis Preston, vice president of data protection at GlassHouse Technologies.

Using the fastest computers on the planet, how long would it take to crunch these numbers and come up with the code? "With 40-bit encryption, the answer is a couple of weeks," Preston says. Some people believe that 256-bit keys like 3DES will become obsolete within five to 10 years. "But right now, it's fine," he says. "AES 256 goes an order of magnitude beyond that.

"As long as you're using something at or beyond 256-bit encryption," Preston adds, "you're fine."

– STACY COLLETT

over the area," says Ouellet. He offers the example of a large retailer that performs online and telephone transactions and holds a lot of credit card information. Within the database, the most sensitive data should be protected.

"Pick the most sensitive fields and encrypt those. Don't encrypt everything, because you're going to kill the performance on the database or have other issues with searching and access," Ouellet says.

Also, keep track of sensitive data elements as they move throughout the process. "They go from one database to maybe a smaller database," Ouellet says. "Is there a way you can leverage centralized storage, like a NAS or SAN, where both databases store their information in the SAN? There's replicated data, but at least it can be protected using an encryption appliance."

Few Shortcuts for Persistent Encryption

Although encryption strategies exist for laptops, databases and backup tapes, transferring encrypted data from one storage level to the next remains a sticking point. In most cases, data must be decrypted and re-encrypted as it travels from one resting place to another.

"There are some solutions that bridge a couple of the different areas, such as laptop encryption and e-mail," Ouellet explains. "But as far as persistent encryption across the network — not right now. "

A few vendors, including RSA Security Inc. and nCipher Corp., offer key management software that could exchange keys between applications from the same vendor. But that technology is in its infancy, Ouellet says.

Enterprise digital rights management (DRM) technologies have the potential to streamline this process. DRM offers persistent encryption and security, and rights activity that is defined as part of the file itself. "There's a tag that's assigned to the file. If I want to view or print the file, I have to validate that I have the proper access rights for that activity," Ouellet says.

DRM becomes even more important if companies need to distribute protected documents beyond the enterprise. Microsoft and Adobe Systems Inc. are developing DRM products. Adobe plans to ship its LiveCycle Policy Server in the third quarter of this year.

"In five years, DRM is going to be the most pervasive way to protect your data," Ouellet says. "Until then, there is no hybrid right now that covers everything. You're going to have different areas that are covered with different types of technology." ▸

Collett is a Computerworld *contributing writer. Contact her at stcollett@aol.com.*

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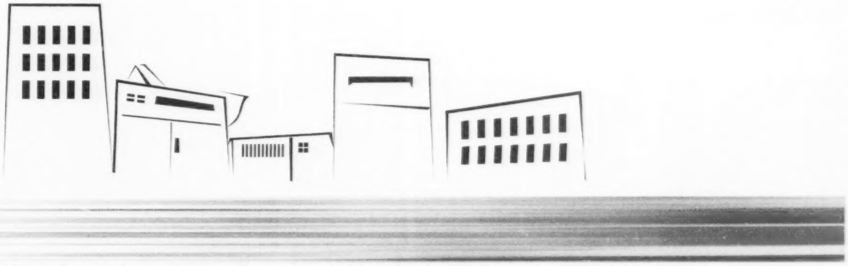

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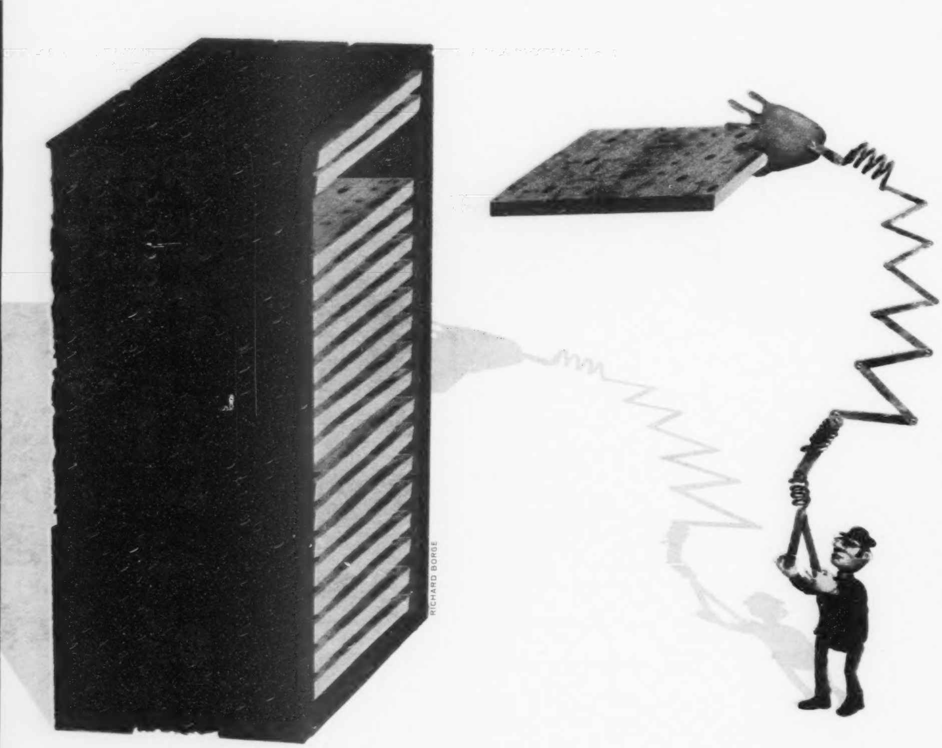


RICHARD BORGE

DIY Recovery

Disk-based storage can cut backup headaches and lets users recover data from active archives.

By Robert L. Scheier

IT WAS the Keystone Kops routines that convinced Scott Roemmele that there had to be a better way to store and retrieve e-mail archives at Quicken Loans Inc.

"We would back something up from the night before and shoot those tapes off-site," says Roemmele, SAN team leader at the Livonia, Mich.-based financial services firm. "A few hours later, the Exchange administrator would get a [user] request to restore something from their in-box from the night before."

That meant having the company's off-site vendor return — for a fee — the same tape that Quicken Loans had just sent it. Even worse were the episodes when Roemmele's staff asked for the wrong tape or multiple users needed restores from different tapes, forcing an expensive volley between Quicken Loans and its off-site vault.

Roemmele has since purchased DD400 Enterprise Series backup and recovery appliances from Data Domain Inc. in Palo Alto, Calif. They reduce the amount of data that needs to be backed up so dramatically that he now stores two months' worth of Exchange backups on the appliances, from which users can easily recover their own e-mails.

Roemmele's dilemma is all too common. The pressure to quickly recover specific files from backed-up data comes from careless users who delete important files, regulators who demand quick access to records, and corporate lawyers who need a particular e-mail or memo to defend a lawsuit.

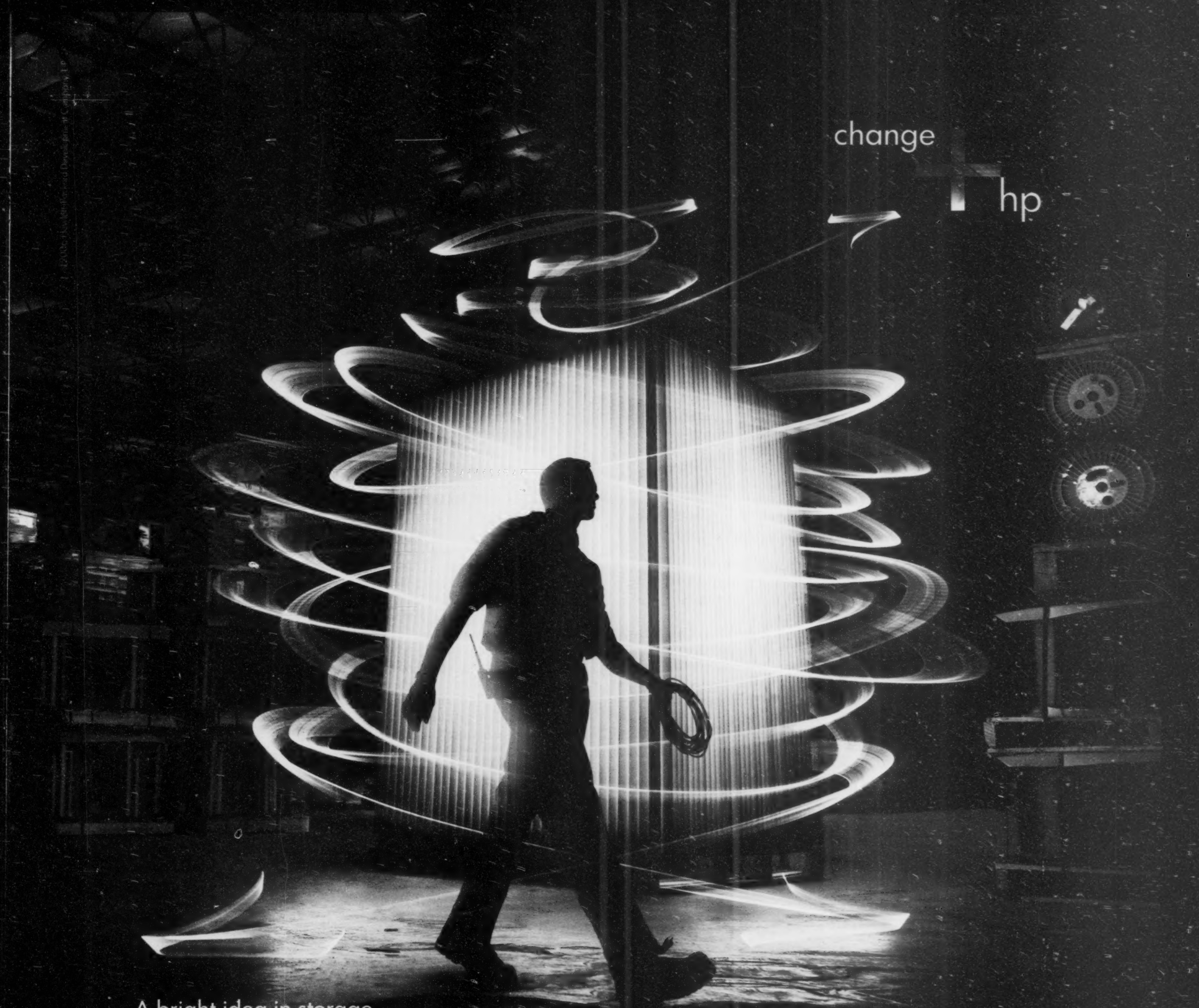
Those demands are reflected in IT spending plans. In a survey of more than 300 IT professionals by market research firm IDC, two-thirds of the respondents said backup and recovery/data protection would be a major driver in their spending on storage services in the next 12 months.

Customers are using a combination of technologies to reduce the amount of data that needs backing up and store it in "active" archives that can be accessed more easily than typical off-site tape archives. Those technologies include disk-based storage, incremental backup, data compression or reduction, and WAN optimization.

Active Archives

"For years, many customers viewed archiving only as taking backup tapes out of the normal rotation cycle and storing them off-site," says Rob Ensley, director of product marketing for information management products at EMC Corp. in Hopkinton, Mass. "We've seen a significant increase in people creating what we call active archives," keeping archived data on disk storage so it can be quickly accessed for regulatory or litigation purposes.

Continued on page 34



A bright idea in storage.

Advance, a leader in lighting electronics, watched its data storage costs grow along with its business. Advance turned to HP to reverse the trend. With HP StorageWorks, Advance is now able to consolidate its data, keeping critical information online for instant access while constantly moving older data to more cost-effective storage devices. All this has reduced the time needed to manage the storage network from days to minutes and clearly illuminated the path to change. hp.com/go/storageconsolidation

Tools of change: HP StorageWorks SAN, Disk Array, Tape Library

hp
invent

Continued from page 32

Oftentimes, the active archive is kept on storage built around ATA or Serial ATA drives, which offer performance and reliability close to that of Fibre Channel arrays but cost significantly less. One user taking that approach is Jamesburg, N.J.-based Argix Direct Inc., which tracks detailed information about shipments it makes to retail stores from its four package-sorting centers.

Until last year, the company had backed up that Microsoft SQL Server data to its headquarters using Backup-Exec from Symantec Corp. However, over time, the amount of data grew so large that it threatened to exceed the company's backup window and slowed traffic on the WAN between headquarters and the sorting centers.

Argix now uses EMC's RepliStor software to replicate the data from the sorting centers to the production database on Fibre Channel drives on an EMC Clariion CX300 storage system at headquarters. From there, the data is backed up daily to ATA drives on the Clariion and then onto tape for long-term storage. The replication cuts the time and bandwidth needed to move the data to headquarters, and storing data on the Clariion ATA drives lets the IT staff restore critical backed-up data instantly, compared with the hours it took to restore from tape, says Argix CIO Nino Silvano.

Argix has achieved similar results with its Microsoft Exchange environment, archiving any e-mail more than 30 days old onto the Clariion's ATA drives and eventually to tape. Compared with the old process of backing up immediately to tape, this has reduced backup times by 80% and allows "you to access the archived e-mail as if it were still in your mailbox," says Silvano. It also reduces the amount of primary storage required for the production Exchange environment.

Curtis Damhof, network manager at St. Peter's Healthcare Services in Albany, N.Y., is using Axion backup and recovery appliances from Avamar Technologies Inc. to replace backups to tape. The appliances cut his backup window for about 3TB of data from hours to five to 10 minutes, and they let him restore e-mail messages "within an hour," he says. "We couldn't do anything even close to that with tape."

At Cincinnati Thermal Spray Inc., MIS manager Steve Wilson is moving to Symantec Backup Exec 10d to replace the sometimes unreliable tape backups that had been done at the company's four regional locations. He says he likes the fact that Backup Exec 10d can capture changes to applications in near real time. This provides extra protection for about 1TB of data, which includes the highly technical paper trail documenting exactly how the company has applied anticorrosion or wear-resistant coatings to aircraft parts.

As the only storage professional in the 200-person company, Wilson also appreciates that Backup Exec 10d gives "users access to their own files and allows them to create their own restore jobs, and even to see the different versions of those files they can restore from." When he finishes the rollout of Backup Exec 10d, Wilson hopes to eliminate tape backups at the remote offices and back up all the data from them to a 2TB storage server at headquarters. Like other customers, he isn't eliminating tape but is creating a weekly backup to tape from the disk-based archive for long-term storage off-site.

Technology Options

Disk-based backup systems use different software to capture incremental backups of frequently changing data. Some, such as Hewlett-Packard Co.'s ProLiant Data Protection Storage Servers, are based on Microsoft Corp.'s Data Protection Manager software. The HP offering provides "near-continuous" backup that fills the gap between daily tape-based backups on the low end and synchronous replication on the high end, says Brad Parks, product marketing manager for network-attached storage at HP.

WAN optimization technologies speed backup traffic over WANs, while wide-area file systems use caching, compression and other methods to consolidate file servers that used to reside in branch offices into the data center. There, both servers and data can be protected more effectively. Vendors such as Data Domain cut backup volumes by breaking the backup stream into tiny bits, comparing each fragment and backing up only those that have changed since the previous backup.

However it's done, the spotlight is on backup and recovery processes. Years ago, "backup and recovery was something you had to do, but it was something like you had to eat your oatmeal," says Doug Chandler, an analyst at IDC. Now, he says, "the pressure's from the business unit, the people who own the application and maybe the general counsel" to not only back up data but to be sure that it can be restored quickly. ◗

Scheier is a freelance writer in Boylston, Mass. Contact him at rscheier@charter.net.

A Comeback for Managed Storage Services?

Managed storage service providers (MSSP), which store customer data at their own facilities, were one of the high-profile victims of the dot-com bust. But as the need to cost-effectively store and retrieve data grows, those providers are getting another look.

A 2003 Gartner Inc. survey of about 120 IT managers showed that 20% were using an MSSP, another 29% had used one in the past, 9% planned to use such a provider, and 42% had no interest, says Gartner analyst Adam Couture. By last year, 50% were using an MSSP, 34% planned to use one, 10% had used one but dropped it, and only 6% had no interest.

Ease of recovery is one major reason market research firm Synovate Americas in Chicago stores 25TB to 30TB of data using an online storage management service from Sun Managed Enterprise Services.

When a customer or researcher needs an old research report or an executive needs to restore data to his notebook computer, "we don't want to spend 48 hours getting a tape and loading it," says Prabhakar Sonparote, senior vice president and IT director at Synovate.

Iron Mountain Inc., a physical records management services firm in Boston, jumped into the MSSP market with its acquisitions of Connected Corp. (for backup of desktop and laptop data) and LiveVault Corp. (for backup and recovery of server data). Revenue from those services is expected to rise from $90 million in 2005 to $140 million to $150 million this year, says John Clancy, executive vice president of Iron Mountain Digital.

But Doug Chandler, an analyst at IDC, estimates that MSSPs sold $215 million in services in 2005, less than 5% of the overall market for backup hardware, software and services, and that by 2009, the market will have grown to only $450 million.

Chandler says the largest, most sophisticated customers will still choose to handle storage themselves, while smaller companies willing to outsource storage will buy it as part of a service package from an established vendor rather than from a relatively unknown MSSP.

He's also skeptical that standalone storage providers are large enough to achieve the economies of scale that would let them provide services at lower costs than in-house storage managers could.

MSSPs can be less expensive when a customer considers all the costs of maintaining storage staff and hardware at multiple locations, says Steve Siegel, vice president of marketing at Arsenal Digital Solutions Worldwide Inc. in Cary, N.C.

Sonparote says he's saving 30% to 40% on capital expenses using an online service, and 100% on expenses such as labor. But Couture warns that many MSSPs price their services differently.

"Some of them charge you for the largest backup you made in a one-month period; some of them charge you for the amount of data you're protecting on the server; some of them charge you for every [gigabyte of storage] you've written to or from," Couture says. He recommends asking competing MSSPs how much it would cost to protect a given amount of data to get "an apples-to-apples comparison."

– ROBERT L. SCHEIER

> **Some [MSSPs] charge you for the largest backup you made in a one-month period; some of them charge you for the amount of data you're protecting on the server.**
>
> ADAM COUTURE, ANALYST, GARTNER

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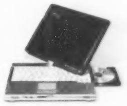

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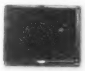

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Battle of the Bulge

Thin provisioning puts storage-hungry users on a diet.

By Jennifer McAdams

RICHARD BORGE

THIN-PROVISIONING applications are among the latest weapons in the battle of the bloated storage budget. Several vendors are now pushing these optional features of familiar storage systems as a way for corporate IT officials to send a powerful message to storage-hungry business units: Finish what's on your plate before going back for seconds.

The back-and-forth between IT officials and users has become an all-too-familiar exchange. "It has almost become a ritual," notes Ernest Wurzbach, director of portal operations at Oakland, Calif.-based Ask.com. "Those of us responsible for managing storage and storage budgets know how much allocated space winds up being attached to products or applications but never gets used."

Waste Not, Want Not

Unused capacity is a natural byproduct of traditional storage-allocation methods, says Tony Asaro, an analyst at Enterprise Strategy Group Inc. in Milford, Mass.

"Normally, if I want to provision a certain amount of capacity for a certain project, I must allocate that much capacity. Say it is 1TB. In reality, the user will probably only need about one-tenth of that space immediately, but I've had to allocate the whole terabyte," Asaro explains. "So the other 900GB cannot be used. There is no access to it. Now, if I do this for every application, I will quickly have a storage system that is 100% allocated but not fully utilized."

That's exactly the situation Ask.com wanted to avoid. Rather than letting a lot of storage capacity earmarked for specific users or business units go untouched for long periods, the information-retrieval giant wanted to immediately use every scrap of capacity available upon the purchase of a single storage architecture for its Excite, iWon and My Way brands.

Wasting Away

A survey of 20 companies that have implemented or plan to implement thin provisioning turned up the following statistics:

80% **of IT staffs consider the upfront work that goes into projecting storage volumes to be a huge drain on resources.**

55% **of companies polled had between 31% and 50% of their storage stranded and unusable.**

Almost 50% **of those enterprises included in the study were in the process of buying new storage systems, even though officials were aware of significant existing storage volumes that were going unused.**

SOURCE: ENTERPRISE STRATEGY GROUP INC., OCTOBER 2005

The company, formerly known as Ask Jeeves Inc., settled on 3PARdata Inc.'s InServ Storage Server and added in the 3PAR Thin Provisioning feature, which allows Ask.com to capture snapshots of "capacityless" online volumes that can be pressed into service.

In addition, Ask.com makes use of another of 3PAR's so-called dedicate-on-write options, Virtual Copy, which also turns up empty volumes available for testing or off-host backups, according to company executives.

Wurzbach says he's been able to shave about 25% off overall storage expenses and has salvaged the 65% of allocated storage that is typically wasted when provisioned through traditional means. "We were able to reclaim all of the overallocated storage, as well as educate project managers on how to realistically forecast their needs," he says.

Other storage vendors now rushing forth with thin-provisioning options include mainstay suppliers such as Hewlett-Packard Co., Network Appliance Inc. and Overland Storage Inc. Joining them are LeftHand Networks Inc. and Compellent Technologies Inc.

All are trying to make the business case for thin provisioning. "The rationalization for these products is a savings on capital costs, because you don't have to buy as much capacity upfront,"

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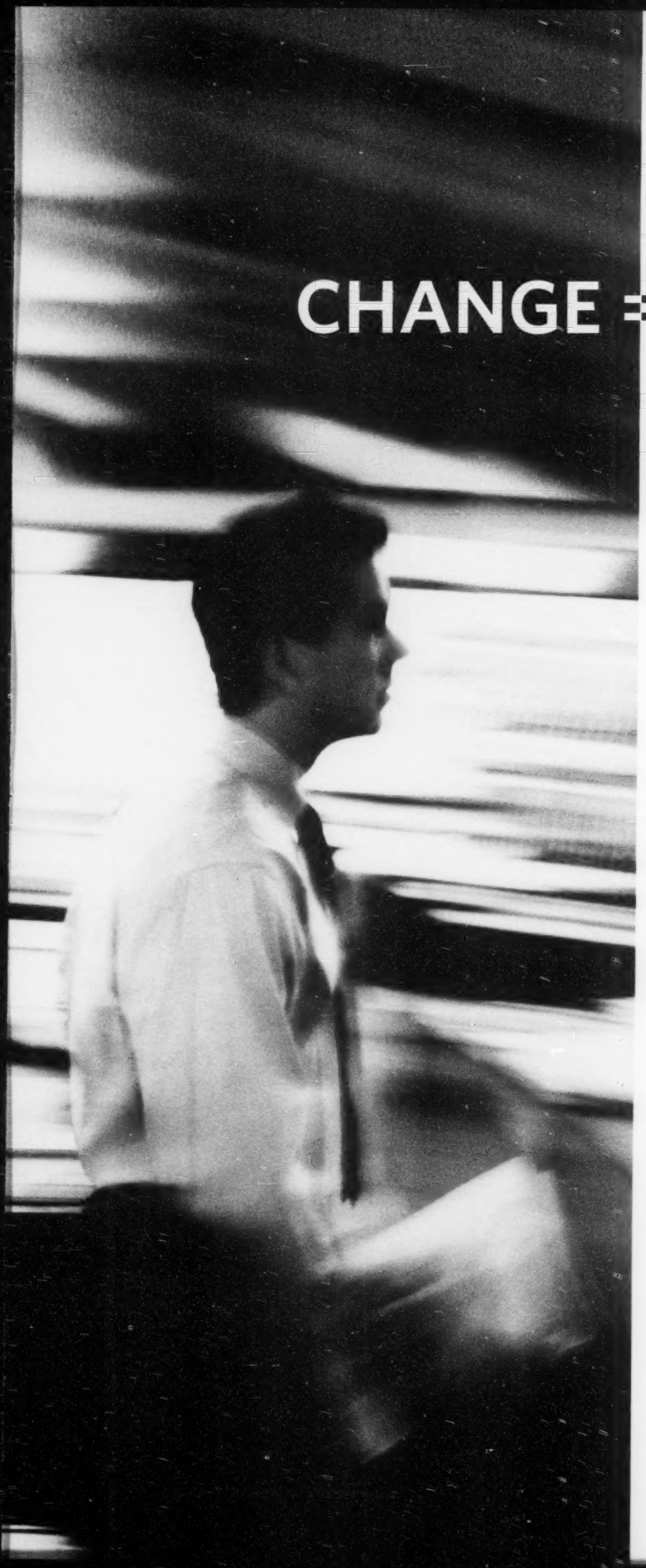

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notes Asaro. It's an argument that proves persuasive to IT leaders loath to continue buying storage capacity that is virtually useless, he says.

"Fifty-eight percent of companies we polled recently said they were aware that they have stranded storage in their organization, and a full half of those had to buy new storage systems regardless," reports Asaro. He says there is a "simple elegance" to thin provisioning that forces users to be accountable for the amount of storage they consume and imposes best practices on executives assigning capacity.

The simplicity surrounding thin provisioning appealed to senior IT executives at Commerce Bank & Trust in Topeka, Kan. "We can underestimate the amount of storage space we need and then always grow it," says Steve Haas, the financial services company's IT security officer.

Thin provisioning also helped Commerce Bank with many of its struggles to meet the disparate storage needs of its departments and programs. "There is a huge difference in the specific sizes our various users require. For instance, we might have a power user out there that requires 500GB of space and another that needs about 20GB. Thin provisioning allows you leeway," Haas says.

Commerce Bank uses LeftHand Networks' thin-provisioning tools. The financial institution has three clustered Network Storage Module 200 storage devices that accommodate about 30 of its servers. By choosing LeftHand's thin-provisioning capabilities, the bank continually monitors the need to add capacity. "We really appreciate the notifications we get when we hit the soft thresholds that tell us we are running out of space. That happened this morning, as a matter of fact," Haas says.

Second Helpings

Being constantly aware of dipping storage levels is one potential drawback of thin provisioning. "The only real issue that users need to consider is having to monitor the 'free space' available in their systems and not let that fall below acceptable levels. Free space is the amount of capacity in a system that has not been allocated to logical volumes," says Stanley Zaffos, an analyst at Gartner Inc.

Also, because users aren't allotted their full share of storage upfront when thin-provisioning strategies are in play, senior executives might get some pushback from systems administrators.

"Definitely, IT managers are a suspicious lot — in part because they've had many weekends ruined when there are problems with critical systems. So they tend to be risk-averse," notes Brian Doerr, chief technology officer at Savvis Inc., a provider of managed and outsourced IT services in Town & Country, Mo. Savvis has incorporated 3PAR's thin-provisioning capabilities internally to make sure it can meet customers' storage needs. The outsourcer also extends thin-provisioning options to its own clients.

Though a certain degree of vigilance is required when using thin-provisioning software, skittishness that users will be left without enough storage is likely unwarranted. "Fears surrounding the deployment of storage that supports thin provisioning have proved mostly unfounded," Zaffos says.

Most experts agree that storage hogging is a much bigger problem than is the monitoring of storage levels or even the unlikely event of temporarily running short on space. "We don't want to promise a lot of storage to our users out there, because they will find a use for it. There may have been a little bit of concern among these users initially that storage would run out, but we just tell them that we have enough storage to last six to seven months and that for *x* amount of dollars we can purchase more," says Haas.

Indeed, thin provisioning can help users become more realistic about their storage needs, because they are no longer faced with getting all of their capacity upfront or not at all. "Thin provisioning improves the relationship between operations and its customers, because the technology allows users to continue requesting more storage," notes Zaffos. "It's always easier to say yes than to explain to users why they do not need what they want."

Better Things to Do

Most experts agree that users shouldn't be left to dream up ways to use all of the storage space at their disposal, nor should they have to fret over the prospect of running out of capacity. "A scientist should never have to worry about how much storage space they have available," says Peter Herrin, a systems analyst at Infinity Pharmaceuticals Inc., a cancer drug discovery and development company in Cambridge, Mass.

Infinity installed 3PAR's InServ S800 storage server in January 2003. Like Ask.com, Infinity made use of the vendor's Thin Provisioning and Virtual Copy options, which took the burden off Infinity officials who were constantly trying to ensure that drug researchers would have enough storage.

"The real trick as far as storage projection goes is priming the pipeline as a particular drug moves from the research to the clinical trial stage," says John Keilty, Infinity's director of informatics. "Our challenges surround both the volume of data we have and its complexity. For instance, when researching a particular drug, a scientist can be working with hundreds of thousands of molecules that make up a protein associated with a certain type of cancer. This means millions of data points. Storage issues are further complicated by the fact that we must accommodate many, many images of these molecules, so we are talking terabytes of data."

Though not always as dramatic as the storage needs of researchers pursuing new cancer treatments, users in many vertical industries truly require vast volumes of capacity to help accomplish their company's mission. Yet how fast must this space be made available? This is a key question to fend off storage hogging, experts agree.

Pressing for answers to such questions and using the thin-provisioning options now on the market can keep storage-hungry project managers and business units from piling their plates full only to leave chunks of capacity untouched. These strategies will also let company officials avoid having to resort to mothers' "starving children in China" arguments to prevent users from staking claim to more storage than they'll ever use. ▸

Thin Provisioning Explained

Sometimes referred to as overprovisioning, allocate-on-write or dedicate-on-write technologies, thin-provisioning options let storage buyers avoid tying up entire pools of capacity immediately.

Instead, IT executives can project the entire amount of storage a department will need in the long term but purchase only the minimal capacity that the unit will consume over a shorter period.

Enterprise officials then work with vendors to set thresholds that signal when additional capacity is necessary and implement alarms or notifications that indicate when it's time to add more disks to a particular storage pool.

Storage hogging – or the tendency among users to overestimate the amount of space a specific business unit or project will consume over a given period of time – is the No. 1 problem thin provisioning seeks to solve.

Second is the storage haggling that ensues when CIOs struggle to avoid buying extra storage upfront while knowing that much of the capacity will remain uselessly stranded within the organization.

– JENNIFER McADAMS

Provisioning Pretender

Being able to grab unused storage from one part of the company and use it in another is a hallmark of thin provisioning and a feature that sets this allocation method apart from a related provisioning strategy – dynamic volume expansion.

Supported by various operating systems, dynamic volume expansion is an online way of increasing storage volumes as necessary and is a capability often confused with thin provisioning, according to Tony Asaro, an analyst at Enterprise Strategy Group.

"Dynamic volume expansion does not support shrinking the size of a volume," Asaro explained in a recent thin-provisioning report.

Because it does nothing about storage that has been allocated for future use but is idling within an organization, dynamic volume expansion doesn't prevent storage hogging or the tendency among users to overestimate the amount of space needed over a given period of time, Asaro says.

– JENNIFER McADAMS

McAdams is a freelance writer in Vienna, Va. Contact her at Jjwriterva@aol.com.

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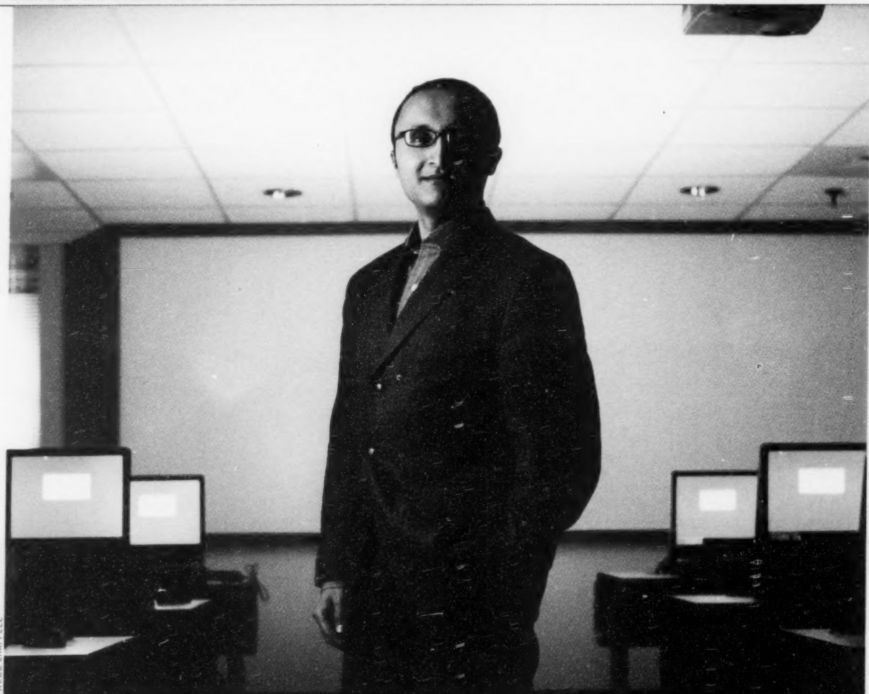

WEBB CHAPPELL

"By using a combination of virtualization and replication, when a server goes down, we can have Blackboard back up and running in three to five minutes," says PRANEETH MACHETTIRA, online technical director at Suffolk University's Sawyer School of Management.

Backing Up the Virtual Machine

Server virtualization demands a multilayered approach to storage. **By Drew Robb**

BOSTON'S Suffolk University launched one of the first online MBA programs in 1999. Initially, the school used an application service provider to host its courses, but in 2004, it brought the program fully in-house, using an e-learning system from Blackboard Inc. in Washington. This meant changing the IT infrastructure to boost reliability.

"When you have an online program running in-house, you have to make sure the uptime is high enough so professors and students can do their jobs," says Praneeth Machettira, online technical director at Suffolk University's Sawyer School of Management. "Virtualization came in as a way to do disaster recovery."

The school used ESX Server from VMware Inc. in Palo Alto, Calif., to create a set of five virtual machines running on ProLiant servers from Hewlett-Packard Co. But although using virtual servers provided some redundancy, it wasn't enough. A standard backup application wasn't adequate either, because of problems with open files and CPU spikes. So instead, Machettira went with Double-Take from NSI Software Inc. to provide full replication in real time of everything taking place on the virtual servers.

"The typical load balancing, clustering and tape backup is not enough," says Machettira. "But by using a combination of virtualization and replication, when a server goes down, we can have Blackboard back up and running in three to five minutes."

A Different Animal

Server virtualization is cropping up just about everywhere these days. According to IDC, more than three quarters of companies with 500 or more employees use virtual servers, and 45% of all new servers purchased this year will be virtualized. Once limited to mainframes and large Unix boxes, the technology is now moving into two- and four-way Linux and Windows servers.

But backing up virtual servers isn't like backing up physical ones. Backup software vendors are doing their part to develop tools that meet the challenges of these new environments, such as avoiding conflicts and resource bottlenecks when several virtual servers are trying to use the same hardware. And companies have found that they need to take a multilayered approach to achieve adequate uptime and reliability.

Companies have several options

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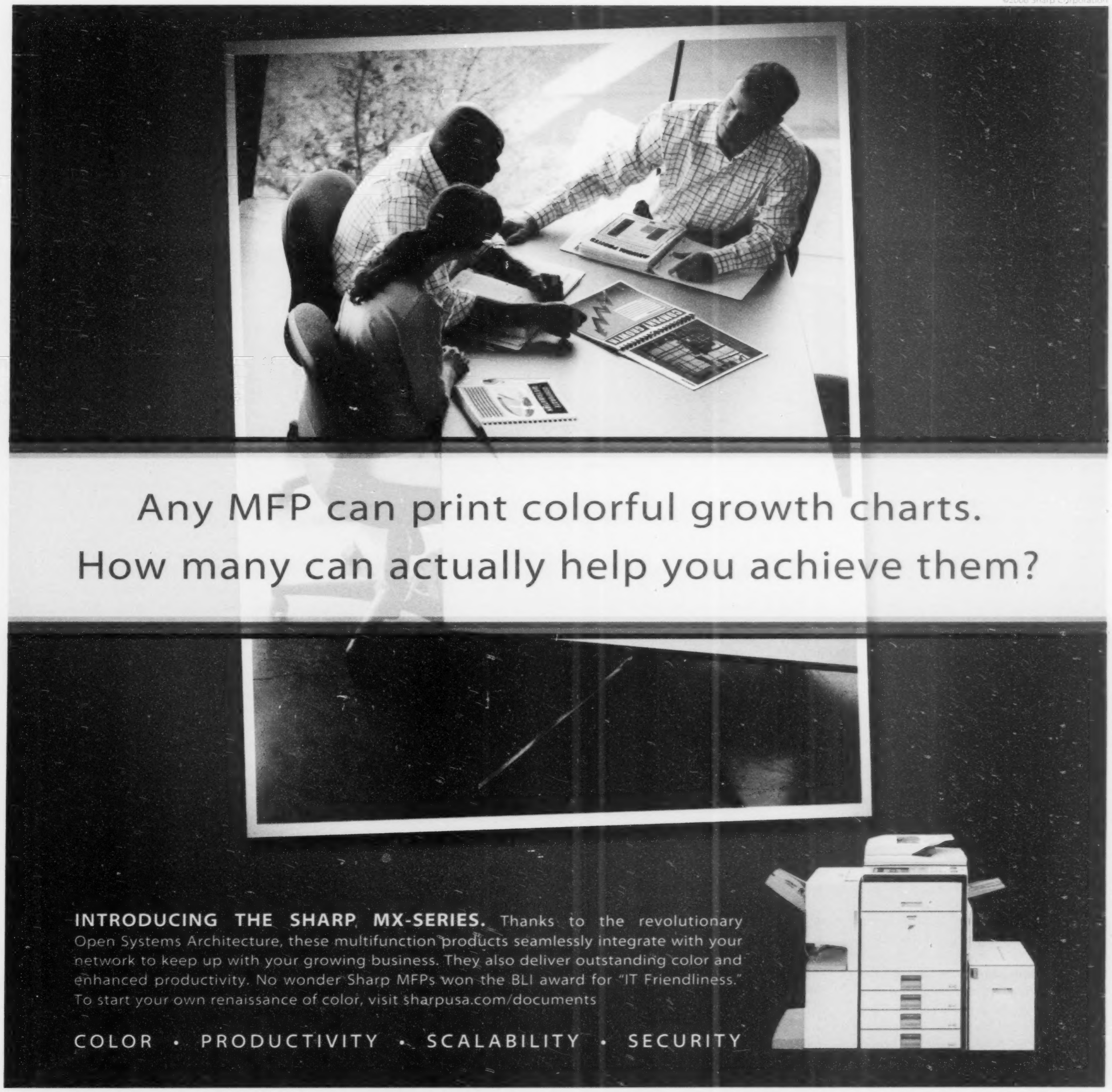

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for creating virtual servers, including Microsoft Corp.'s Virtual Server 2005, SWsoft Inc.'s Virtuozzo and the open-source Xen, which is supported by XenSource Inc. Then there's the industry's 800-pound gorilla, VMware, which was bought last year by EMC Corp.

With the expansion in virtualization comes the need to back up virtual servers, and some users were concerned that EMC would try to use its ownership of VMware to promote its own backup products to the detriment of other vendors. But so far, that hasn't been the case.

"I don't see a lot of politics in that area," says Andi Mann, an analyst at Enterprise Management Associates in Boulder, Colo. "They compete against and partner with the same companies."

Charles Keiper, senior NetVault product manager at BakBone Software Inc. in San Diego, says he hasn't seen any changes as a result of the EMC buyout and doesn't expect to. "In the long term, they may provide some level of integration we can't match," he says. "But I do not see them changing the current model, because it would restrict the growth of VMware if they restricted the ability of products to interoperate."

Backup for All

Backup vendors are ensuring that the latest versions of their software can address both physical and virtual machines, and from an administrator's viewpoint, there is often no difference.

"For the most part, a virtual machine works and acts the same way a physical machine does," says Bob Roudebush, director of solutions engineering at NSI Software in Hoboken, N.J.

But the backup software has to treat the virtual machines differently. For one thing, there is the matter of resource consumption. Running multiple virtual servers on a single physical server results in better resource utilization during normal operations but can saturate those resources during backup.

"The problem is compounded when you have multiple virtual machines competing for resources from the host system during backup cycles," says Tricia Jiang, technical attaché for IBM Tivoli storage systems. "Backups from one virtual machine can starve resources from applications running in other virtual machines." To address this, Tivoli Storage Manager can stagger the backups across low-peak windows.

Then there is the matter of what to back up — each virtual server individually, or the physical server on which they run. Syncsort Inc.'s Backup Express lets users select either mode.

How Many Licenses?

Backup vendors follow different licensing schemes for backing up virtual servers. Here's a sampling of them:

- **Symantec LiveState Recovery:** On a per-system basis. One license for each instance of an operating system, virtual or physical.
- **BakBone NetVault:** One license per client. If multiple virtual machines are being individually backed up, each requires a license. If the physical server as a whole is being backed up, one license covers the server, regardless how many virtual machines are running on it.
- **CommVault Galaxy:** Priced per agent.
- **NSI Software Double-Take for Virtual Servers:** One license covers up to five virtual machines running on a single host.
- **Tivoli Storage Manager:** Per processor. Each component installed on a virtual machine is licensed according to the number of processors on the host machine.
- **Syncsort Backup Express:** Same as physical servers – each system on each node requires a separate client license.
- **CA ARCserve:** One license for the host service and additional licenses for virtual machines.
- **EMC NetWorker:** Separate licenses for each virtual server, but EMC is considering a model where a license would cover both the host and all its virtual servers.

– DREW ROBB

There is also the option of backing up the entire virtual server as a single file. "This method requires fewer backup agents on the virtual machine but is not application-aware," says Kelly Harriman-Polanski, director of product marketing at CommVault Inc. in Oceanport, N.J. "It also requires backup of very large files, which are typically 2GB in size or larger, unless the administrator takes the time to execute an export command to convert the file and zero-out the unused portions of the file."

According to Brian Wistisen, senior product manager in Symantec Corp.'s data management group, the main challenge lies not with the backup itself, but with the process of converting between the virtual and physical environments.

"This is where many solutions face the realities — and dependencies — of dealing with all the various low-level hardware devices and drivers necessary to operate the system effectively," he says, "particularly when converting from a virtual state to a physical one."

Most companies are adopting a multilayered approach to backup. Suffolk University, in addition to using replication, has tape backup for off-line storage and is testing True Image software from Acronis Inc. as a way to achieve real-time imaging. Machettira says traditional tape is the university's third or fourth layer of backup.

"Now that we back up to the SAN, we do it disk-to-disk-to-tape," Machettira explains. "We figure tape is the backup of backups when you send something outside for storage."

Terence Choy, network manager at frozen quiche manufacturer Nancy's Specialty Foods in Newark, Calif., has three VMware virtual servers on a single box running Microsoft's SQL Server. He replicates data instantly between 1TB primary and secondary IP SANs, both from StoneFly Inc. Daily incremental backups are sent to online backup service provider EVault Inc. in Emeryville, Calif. After the initial data upload to EVault, the daily data changes might be as little as 100MB.

Choy uses EVault's management console to configure all the backup and restore jobs. "It operates the same way, whether you are backing up virtual servers or physical servers," he says.

John Buchanon, senior network engineer at components manufacturer Sypris Solutions Inc. in Tampa, Fla., runs 55 servers, including five SAN-connected production VMware ESX servers and 30 production virtual machines running various flavors of Windows and Unix. He runs four to 14 virtual machines on each ESX server.

Buchanon is planning for both disk-to-disk and disk-to-tape backup once he gets additional space in the SAN. But in the meantime, he backs up data nightly to three tape drives using Backup Express from Syncsort Inc.

All of the virtual servers communicate with the Syncsort master server by TCP/IP via virtual network interface cards. All of the virtual servers share one or two physical Gigabit Ethernet connections on each ESX server.

"One would expect slower backups, but we haven't seen any significant difference in throughput or backup behavior compared to physical servers of the same class of CPU, RAM and storage," says Buchanon. "Since the master server tests the available throughput per backup task per server, it migrates to the fastest-responding virtual machine at any given time, just as it does with the physical servers."

Virtual Perfection

Robert Carver is manager of IT operations at the Southcentral Foundation, a nonprofit organization in Anchorage, Alaska, that operates 65 programs providing health care services to 50,000 Alaska Native and American Indian people. He runs most of his servers on VMware, with the exception of his Microsoft Exchange and main database server. All the rest run on Dell Inc. PowerEdge 1855 blades with dual-core Intel Xeon CPUs. It stores the data on a 10TB 920c NAS cluster from Network Appliance Inc. and mirrors the data to a NetApp NearStore R200 appliance located across the street from the data center. In addition, the virtual servers store their own files on an iSCSI drive.

"It's not tiered storage, just really redundant," Carver says.

He does a full backup across the street during every downtime window — about once every two weeks — using BakBone's NetVault software, which then backs up the NearStore data onto tape. Carver also uses NetApp's Open Systems SnapVault (OSSV) to provide up-to-the-minute backups at a file level. He uses PlateSpin Ltd.'s Power P2V migration software to move files from physical to virtual servers. When a virtual or physical server goes down, he then uses NetVault to restore the server from the backup and OSSV to load any additional files from the iSCSI drive.

Carver says backup and restore procedures work equally well for the physical and virtual servers.

"We've had everything from a server erroring out in the middle of a Windows service pack installation to a virtual machine having trouble booting up," says Carver. "But once it was restored, we have never had one come up corrupt."

Server virtualization itself is designed to add redundancy and reliability to enterprise systems. With adequate backup mechanisms in place, it moves one step closer to becoming a fully supported enterprise architecture. ◗

Robb is a Computerworld *contributing writer.*

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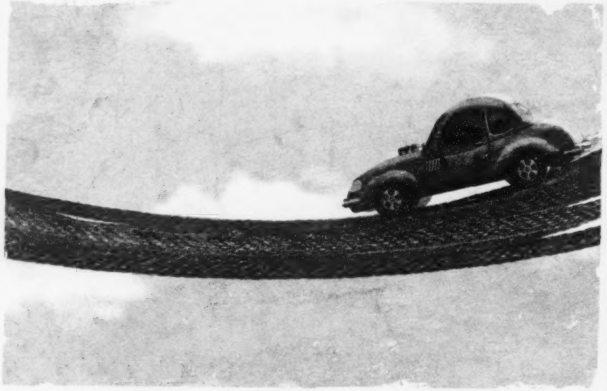
Cruising Over Copper

Ethernet over copper cabling promises to lower costs for high-bandwidth storage. **By John S. Webster**



RICHARD BORGE

JUST WHEN IT LOOKS LIKE Fibre Channel is the clear choice for high-bandwidth networked storage, trusty old Ethernet gets a performance boost that makes iSCSI a viable competitor when it comes to sheer data-transfer speed.

The latest IEEE specification for 10 Gigabit Ethernet (802.3an, if you're keeping track), also known as the 10Gbase-T standard for unshielded twisted-pair Category 6 copper cabling, is expected to be ratified this summer.

While the existing Ethernet spec for copper cabling, 802.ak, or 10Gbase-CX4, will run up to only 15 meters, 10Gbase-T will run up to 55 meters over Category 6 untwisted-pair cable and up to 100 meters over shielded twisted-pair cable.

Although the new spec won't change the landscape of networked storage, it should allow Ethernet- and IP-based storage to solidify its place in business.

The latest 10 Gigabit Ethernet specification will be finalized just as the market for the high-bandwidth form of the networking technology gains momentum. Dell'Oro Group Inc. expects the 10 Gigabit Ethernet market to grow from $1.8 billion in 2006 to $4 billion in 2010. The research firm also forecasts 10 Gigabit Ethernet port shipments to grow from 854,000 in 2006 to almost 10 million in 2010. Meanwhile, the average selling price for the switches is expected to drop from $5,200 to just over $400 during the same period.

At least in the near term, Fibre Channel will continue to be the protocol of choice for transaction-heavy networking associated with storage-area networks (SAN). But three factors could help make IP-based storage using iSCSI an attractive low-cost alternative to Fibre Channel in SANs and other shared storage architectures: the plummeting cost of 10 Gigabit Ethernet ports on both servers and storage arrays, the fact that IP-based storage is less complex than Fibre Channel, and an abundance of on-staff expertise in IP and Ethernet in IT departments.

"Choosing Fibre Channel over Ethernet in the data center has been perfectly logical, but now Ethernet is keeping pace with Fibre Channel's continuing performance improvements," says Sal Capizzi, an analyst at Yankee Group Research Inc. "Fibre Channel is currently at 8Gbit/sec. and will be up to 10Gbit/sec. in late 2007. Customers who are considering iSCSI can now be assured that it won't be outpaced by 8GB Fibre Channel."

All the reasons for using iSCSI — especially low cost and simplicity — are reinforced by the new specification. Throughput speeds of up to 10Gbit/sec. make the IP-based standard suitable for smaller organizations that don't have the resources or expertise to deploy Fibre Channel, as well as larger companies with substantial investments in Ethernet, says Capizzi.

"The chief benefit to implementing 10 Gigabit Ethernet will be for applications that require high bandwidth for continuous data flow, such as traditional backup to tape, disk-to-disk backup, data archiving and data replication for disaster tolerance," he says.

The Future of Ethernet

Cost and complexity were two of the reasons Franklin W. Olin College of Engineering in Needham, Mass., opted to deploy iSCSI-based storage arrays instead of a Fibre Channel-based SAN. With a fully converged IP network in place, sticking with IP-based storage also made sense from an integration standpoint. Not only did the college save money on equipment — Fibre Channel-based SANs would have cost twice the $100,000 the school spent on two EqualLogic Inc. iSCSI-based SANs — but it also avoided Fibre Channel consulting fees, says CIO Joanne Kossuth.

"With iSCSI, we get a greater number of servers on the storage array for less cost. The arrays are also easy to set up — my network administrator can manage them — and I didn't have to hire a storage manager. There were no two-week consulting fees," says Kossuth.

Although the college's network doesn't currently support 10 Gigabit Ethernet, with Category 6 copper cable inside buildings and fiber between them, the wiring infrastructure is in place to support it.

Indeed, iSCSI storage vendors use continuous Ethernet throughput upgrades as a key selling point. "One piece about Ethernet is it's interoperable and provides an incremental upgrade path, as Gigabit Ethernet moves from the core of the network and then into the data center and then into storage at the edge of the data center. 10 Gigabit Ethernet will expand throughout the network, starting in the core and moving outward," says Eric Schott, director of product management at EqualLogic in Nashua, N.H.

He adds that although prices are dropping rapidly, 10 Gigabit Ethernet prices have a ways to go before they'll rival those of today's 100MB products.

However, as the 10 Gigabit Ethernet spec gets further refined, IT managers will be inclined to look at iSCSI as a viable alternative to Fibre Channel.

"People have been worried about lack of throughput, but now, even people who are still spending money on Fibre Channel might look at iSCSI," says Kossuth. This move will be cost-driven. People who wouldn't want to replace transactional systems with a Fibre Channel array might consider iSCSI as an intermediate step for, say, human resources personnel file storage.

As Ethernet bandwidth continues to increase, not only will small and midsize businesses that haven't invested in Fibre Channel benefit; large enterprises might look at copper cabling for departmental storage, says Stephanie Balaouras, an analyst at Forrester Research Inc.

"There's significant momentum for IP-based storage," says Balaouras. Small and midsize companies that aren't using Fibre Channel are looking at iSCSI or at both. A large enterprise that needs high bandwidth in a transaction-heavy environment will use Fibre Channel, but the interesting story will be when Ethernet catches up, which might mean there will be more adoption in large organizations. 10 Gigabit Ethernet is moving into more critical environments.

Even though the new spec may cause IT managers to look at IP-based storage as an alternative to Fibre Channel, the decision will continue to be based on more than performance.

"Ethernet and Fibre Channel bandwidth will leap-frog each other over the years, and users should not make their decision based on speed alone," says Yankee Group's Capizzi.

However, Ethernet's ever-increasing throughput, coupled with its ease of deployment and integration, will attract IT managers' attention.

In the end, the specification for 10 Gigabit Ethernet over copper wiring creates another choice for high-bandwidth networked storage and, says Kossuth, it "mitigates some of the concerns over throughput." ▸

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Virtual Tape

DEFINITION

Virtual tape is an archival backup technology that saves data on hard drives as if it were being stored on tape. A virtual tape appliance or server emulates traditional tape devices and formats, allowing existing tape-based processes and procedures to remain in place. Virtual tape systems offer faster backup and recovery times and lower operating costs.

BY RUSSELL KAY

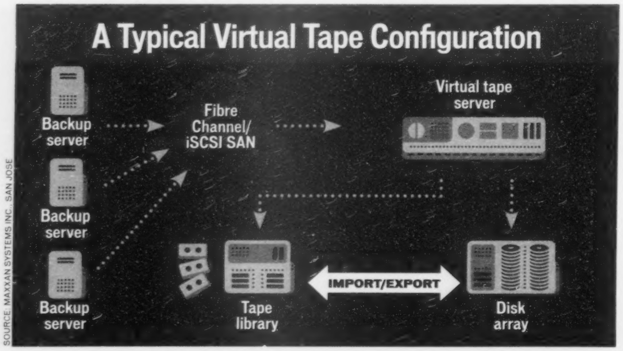
QUICK STUDY

SINCE THE DAWN of the digital computer age, long-term data storage and backup have been the province of a single primary medium: magnetic tape. Tape has compelling advantages. It's inexpensive to operate and buy, and even cheaper to store, whether it exists on reels, inside cartridges or as part of an automated tape library system. Tape also has the benefit of separating the portable and inexpensive storage medium from the larger, more costly recording machinery. The introduction of tape made it possible to back up everything, keep copies off-site and restore older or deleted files as needed.

In comparison, hard drive storage combined the machine and the medium into a single piece of hardware, gaining speed and simplifying access. But it also drove up storage costs and was for years simply not economical for backup use. Tape persisted as the storage medium of choice, even though it suffered from poor performance and the need for sequential, not random, access to stored data. It wasn't very fast, and for the most part, operations had to be run in batch modes, often overnight.

In the early 1970s, IBM predicted the death of tape as a backup medium, and since then, others (including *Computerworld*; see QuickLink 41762) have continued to echo that sentiment. That hasn't happened yet, and it's not at all obvious that it will. But the amount of data being stored and processed continues to grow exponentially, and while ever-larger tape formats continue to emerge, the time needed to perform regular backups is also growing.

Finally, the economics of backup changed radically as hard drive storage became far cheaper. Not only are new hard drives cheap, capacious, physically smaller and increasingly reliable, but they operate much faster and offer online storage at off-line prices — and with no waiting. A 250GB hard drive today costs less per gigabyte than the digital linear tape cartridges for a relatively recent tape library. Although tapes are still much more portable than RAID arrays, it's now practical to replace tape with disk for primary backups to boost speed, improve reliability and eliminate delays in loading and searching for needed data.



A Typical Virtual Tape Configuration

SOURCE: MAXXAN SYSTEMS INC., SAN JOSE

One logical response to this technological change was for enterprise IT to shift to hard-drive-based backup systems. But this approach required a surprising amount of work to convert existing systems, policies and procedures. Enterprise backup teams are used to fine-tuning backup environments and applications by adding custom scripts and workflows to manage thousands of individual tapes both on- and off-site.

Even positive change will be disruptive in this setting, so IT managers are rightly concerned about the effects of disk-based backups on their systems and scheduling. The better answer, at least for now, turns out to be a game of "Let's Pretend."

With virtual tape, even though we're backing up direct to disk, we pretend we're dealing with tape. Data is backed up to the disk subsystem by accessing it through what's called a virtual tape library — software that emulates the properties of tape. By making the disks look like tape, the virtual system lets IT use its existing tape-based scheduling procedures and practices, scripts and workflows; the only difference is that backup data is stored on a different set of devices. This is such a simplification as to be nearly simple-minded, but it allows IT to expand its capabilities with little or no effort, and it gets away from the need to handle, rotate and store near-line tapes. The net effect is that virtual tape makes both backups and restores faster, more reliable and cheaper.

A Matter of Time

Once upon a time, backups were performed at night, when there were few or no users on the system and there was plenty of time and capacity. Nowadays, users are on systems around the clock, and there's no period when you can shut everything down for backup. As information sources explode and regulation increases, there's so much more to be backed up that we need ever more time and capacity to do so. So we tell the backup software that it's writing to a tape drive, when in fact we're pointing it at a hard disk. You can think of a disk drive as a large, upfront cache that eliminates delays in changing tape reels or cartridges, or in repositioning tape media for noncontiguous data.

Virtual Tape Benefits

- **Significantly cheaper than adding new automated tape library devices.**
- **Performs at disk-write speeds, 10 times faster than "real" tape.**
- **Much faster restores become the norm.**
- **Can consolidate a variety of older tape backup formats.**
- **Is deployable into existing tape-based infrastructures.**
- **Requires few or no changes to backup processes, scripts and workflows.**
- **Reduces the need for tape maintenance, rewriting and conditioning.**
- **Rapidly scalable as needs grow.**

The virtual tape libraries emulate industry-standard-based physical tape drives and libraries, presenting themselves as tape to all of the common backup software applications. A backup media server sends backup streams to a virtual tape library, which writes the data sequentially — that is, in native tape format — to disk storage. Through this bit of hocus-pocus, the virtual tape library appears to the system as anoth-er automated tape library, but the fact that data is being written to disk means backup jobs are completed significantly faster, often by a factor of 10 or more.

Virtual systems emulate tape operations even to the point of assigning bar codes to virtual tape "reels" or "cartridges" used by the backup software.

Virtual tape isn't necessarily the entire answer to backup. It still doesn't address the requirements of off-site storage and disaster recovery, but it can be used with a hierarchical storage management system in which data is moved to slower and increasingly less expensive storage media as it is used less. Virtual tape may also be included as part of a storage-area network, with a single virtual tape server managing less-used or archived data for many networked computers. ▸

Kay is a Computerworld *contributing writer in Worcester, Mass. You can contact him at russkay@charter.net.*

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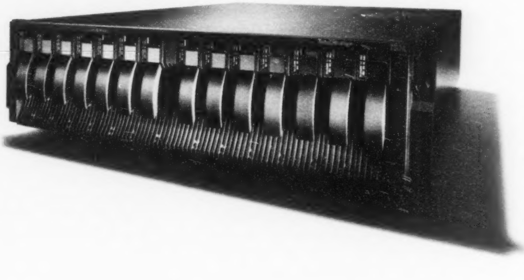

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The Storage Specialty

The data explosion is bringing more status, and higher salaries, to storage workers. **By Steve Ulfelder**

CAREERS

FOR THE PAST HALF-DECADE, it seems, networked storage has been expected to explode. "The Year of the SAN" was always just a few calendar flips away, analysts and vendors assured us.

Well, rearview mirrors are always more reliable than crystal balls, and many experts believe that 2005 was, in its own quiet way, the year of the SAN. Regulatory demands, wide acceptance of virtualization and an explosion of data have combined to bring respect, attention and dollars to the field of storage.

That's good news for IT professionals specializing in storage. Storage administrators' national average salary tops $80,000, while senior administrators average more than $95,000. And some experts say those pay scales have grown 2% in the past six months alone — a trend that shows no sign of leveling off.

If rising salaries and status lead technology workers to deem storage a career specialty, as has happened with security, it will be a new development. "You don't set out in your career to do storage," says David Foote, president of New Canaan, Conn.-based Foote Partners LLC. "It's not a sexy place, and until recently, there was no ROI you could point to."

Storage tasks used to be performed by Unix systems administrators, MVS experts with mainframe backgrounds or Windows wizards focused on the desktop. The evolution of these ad hoc groups into a dedicated storage team again mirrors trends in the security field, experts say. "At some point, you're doing so much work related to security or storage that it makes sense to put that in your title," Foote says.

All-Around Storage

Until recently, storage chores had subsets across the IT organization, from the desktop to legacy databases and mainframes. But the growing importance of storage has pushed many enterprises toward a holistic approach. That's both good news and bad for those seeking a career path in storage. It's good because most IT workers, from help desk techs to Unix sysadmins and database administrators, are likely to have at least some storage experience. It's bad because the most sought-after storage professionals are the ones who are familiar with all of those areas — and they are rare.

The desirability of storage workers with broad experience is seen in a higher-than-average salary differential between storage administrators and those who merit the "senior" title. Foote's 2006 salary survey gathered data from 51,000 U.S. IT pros at more than 1,800 employers. The survey, which was released in January, found a mean national salary of $80,500 for storage and SAN administrators, while the mean salary for senior storage or SAN administrators was $95,000.

Storage administrators' bonus pay ranged from 7% to 12% of their base salaries, while their senior counterparts' bonuses ran from 9% to 18% of base salary.

The $14,500 base-pay premium for senior storage administrators — a bigger differential than that found in most IT specialties — reflects "a big run on experienced senior people who really know what they're doing," Foote says. The survey found that salaries for all storage administrators have risen about 2% in the past six months, a similar increase to that of IT as a whole.

Gary Foote (no relation to David) understands the challenges of storage administration and hiring storage administrators. He spent nearly two decades in the field, and for six years he handled about 250TB of Unix storage at an East Coast health care firm that he declines to name (he left the company last year).

With mind-boggling quantities of data, complex security and accessibility needs, and heavy government oversight, health care was one of the first industries to make storage a priority.

"It was tough to find storage people, because it's such a new specialty," says Gary Foote. He adds that many Unix administrators, who had experience managing large numbers of servers, transitioned well into the storage arena. Asked about finding IT workers experienced with SANs, he laughs. "Impossible," says Foote. "We had to send [new hires] to vendor-provided classes and make sure our experienced people gave them a lot of help."

Certification Push

Research shows that certifications don't necessarily lead to higher pay in the storage field. That's partly due to the fact that such certifications tend to be for a single vendor only.

The Storage Networking Industry Association is trying to change that. For two years, SNIA has offered, through partners, a "vendor-neutral certification program so IT [workers] can learn storage as a discipline without being tied to a vendor product," says Ralph Luchs, the association's education director.

SNIA offers a certification in storage basics for anybody who wants to pursue the field. The program then splits into two tracks: One focuses on architecting a storage network, and the other certifies IT professionals in management. The cost to take each exam is $200, while the cost to prepare varies widely depending on experience. According to Luchs, third-party groups ranked the SNIA program as the industry's fastest-growing one in 2005.

With rising demand, fast-changing technologies and a higher profile, storage is emerging as a hot niche for IT professionals. ▸

Ulfelder is a freelance writer in Southboro, Mass. Contact him at steve@ulfelder.com.

Big Cities, Big Bucks

The Foote Partners 2006 salary survey found a predictable geographic pattern in storage administrators' salaries: Pay is highest in areas where large enterprises (and their massive storage needs) are concentrated and lowest where big companies are rare. The top five cities and regions are:

1	San Jose
2	San Francisco
3	New York
4	Lower Fairfield County, Conn./ Westchester County, N.Y.
5	Los Angeles

The bottom four of the 63 cities named in the research are:

60	San Antonio
61	Nashville
62	Omaha
63	Oklahoma City

BASE: More than 50,000 IT workers in the U.S. and Canada

SOURCE: FOOTE PARTNERS LLC, JANUARY 2006

Résumé Gold

Experts and hiring managers say the following skills and areas of experience make a storage administrator's résumé attractive:

- **The ability to design, configure and administer SANs.** This is by far the hottest skill in storage today.
- **Thorough knowledge of the old standby, tape storage.** "Tape libraries are still the chosen backup medium in most companies," says David Foote of Foote Partners. The need to perform a full backup and restore won't vanish for years.
- **Experience managing either a specific vendor's products or a multivendor environment.**
- **Experience working with the vast, multiterabyte data warehouses that are becoming de rigueur in corporate America.**

– STEVE ULFELDER

FROM STORAGE ADMINISTRATOR TO BUSINESS PARTNER

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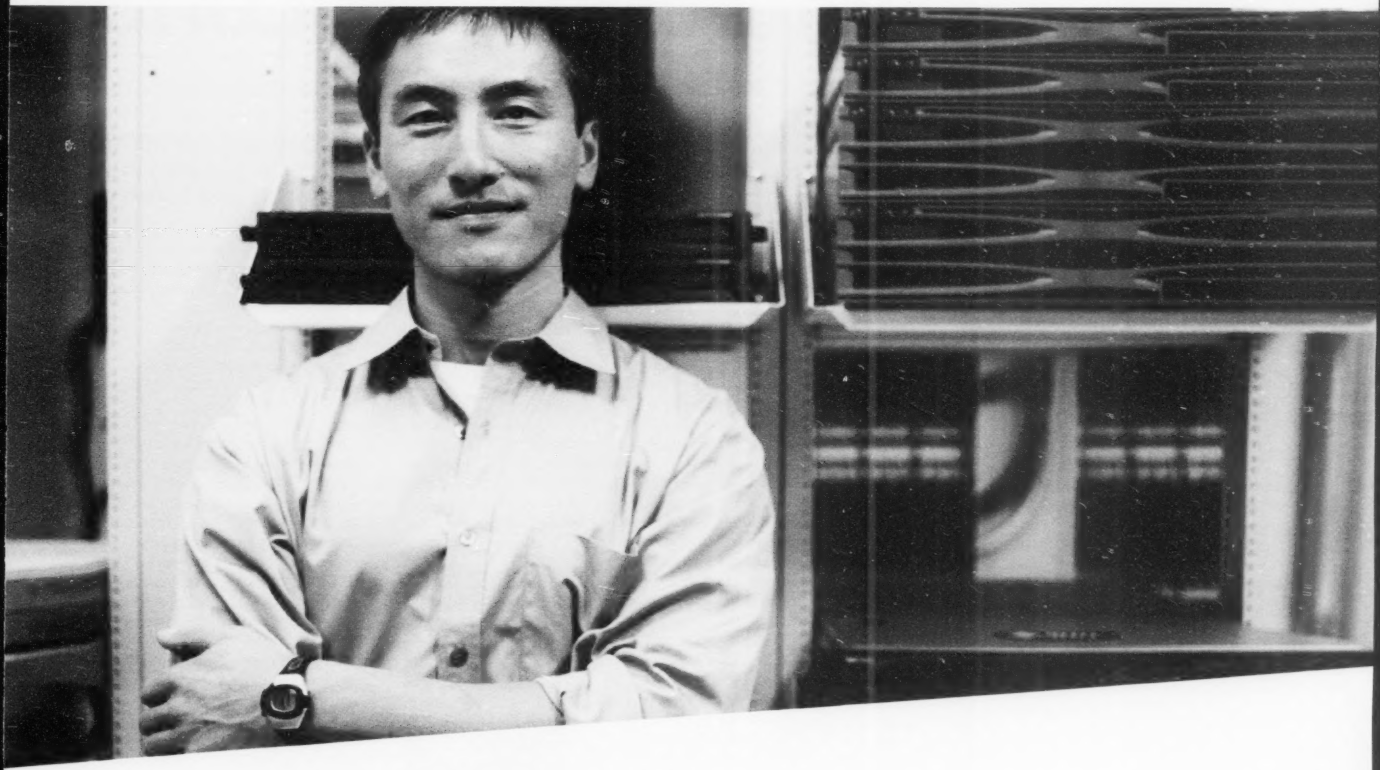

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Snapshots

Market on the Move

The worldwide storage software market grew 10% year over year to $2.1 billion in the third quarter of 2005. Here's the breakdown:

- The storage replication market posted the largest gain, at 16.8% in year-over-year growth.
- The backup and archive market grew 12.7%.
- The file-systems software market grew 15.6%.

SOURCE: IDC WORLDWIDE QUARTERLY STORAGE SOFTWARE TRACKER, DECEMBER 2005

Fab Five

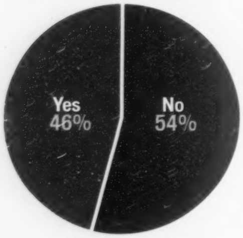
The top storage software vendors, based on third-quarter 2005 revenue figures.

1	EMC Corp.	$621 million
2	Symantec Corp.	$427 million
3	IBM	$201 million
4	Network Appliance Inc.	$148 million
5	Hewlett-Packard Co.	$143 million

SOURCE: IDC WORLDWIDE QUARTERLY STORAGE SOFTWARE TRACKER, DECEMBER 2005

Ready – or Not?

Do you have documented security procedures in place for your storage infrastructure?



BASE: 300 companies

SOURCE: GLASSHOUSE TECHNOLOGIES INC., OCTOBER 2005

MARK HALL

Storage-free Zone

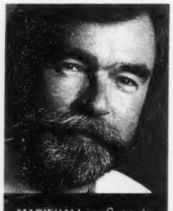
ISMAEL GHALIMI is either a harbinger of the future or a candidate for the loony bin. With the exception of his operating system and a browser, he has emptied his PC's disk drive of business applications and data. He has no local storage for his work. Zip. *Nada. Nichts.* No, he isn't hooked to a Citrix server or some back-end mainframe. He put all his information on the World Wide Web. Is he crazy or what?

Crazy like a fox, perhaps.

The CEO of Intalio Inc., an open-source business process management (BPM) software company in Redwood City, Calif., sounds perfectly rational when he discusses what he calls the Office 2.0 project. (You can read about his positive and negative experiences on his blog at *http://itredux.com/blog/office-20*.) He uses a variety of online services, such as Salesforce.com, Google's Gmail, Flickr and Zoho, a Microsoft Office-compatible service.

Ghalimi has even discovered that he can bend these online tools to do more than what they were originally designed for. For example, he uses Salesforce.com's CRM service as the business database, which he shares with co-workers and partners. And he has complete control over access rights.

He says the Zoho word processor is great, and even its spreadsheet, which is only in its alpha development stage, works well through the browser and is compatible with Microsoft Excel files. He can open an Excel file, make changes through the browser and send it to a colleague who can then open it in Excel and see his changes. He praises Zoho's technology as “really impressive.”



MARK HALL is a *Computerworld* editor at large. Contact him at **mark_hall@computerworld.com**.

Zoho is based on a rapidly growing set of interactive Web-based applications using a group of online tools collectively called AJAX — for Asynchronous JavaScript and XML. Ghalimi says AJAX will be the key to making his Office 2.0 project more than just an idiosyncratic effort by technophiles like him.

His stated goal is to be more productive by not using locally stored apps or files. Ghalimi claims that, so far, “it's the most productive way to get my work done.”

He doesn't force other Intalio employees to follow his lead. And, ironically, his company doesn't offer its BPM software as a service. Although, he says, “we're looking into it.”

There are obvious limitations to Office 2.0. Working while flying on a plane comes to mind. But wireless networks are becoming ubiquitous, even on airplanes, so network access is increasingly less of an issue for Ghalimi.

One drawback, though, does cause him some pain — online storage and backup. Today, when Ghalimi surpasses the Gmail 2GB storage limit, he has to send files to a Yahoo account to free capacity on his Google mail service. When the Yahoo account fills up, he needs to open another one. He acknowledges that it's a kludgy approach.

Although Ghalimi trusts Salesforce.com to keep its data center up and running, the information he stores there is critical to his business, so he does back it up to another server — one he set up at his folks' house. (You see, he's not crazy after all.)

To me, the storage and backup problem is the weakest link in Office 2.0. Even entry-level Dell laptops come standard with 40GB of storage. And high-end consumer-oriented iMacs come packed with a quarter of a terabyte. Despite those capacities, people continue to buy external hard drives to handle the spillover from their systems' main drives.

Even if reliable data-storage services with decent capacities at reasonable cost emerge, they'll need to be tied to the services where you're creating your data. Manually moving files from one service to another, like Ghalimi does between Gmail and Yahoo, isn't an elegant solution.

Inevitable Shift

Ghalimi doesn't expect a stampede of fellow travelers racing to join the Office 2.0 phenomenon. “It will start slowly,” he acknowledges. “There will be resistance because habits are hard to change.”

By 2010, he does expect to see a significant shift away from PCs loaded with apps and data.

I agree. It will start to happen in significant numbers in business. IT will discover that with tools like AJAX, it can offer full-fledged Web-based applications to far-flung users with greater security and with all the features people need to get their jobs done.

What's more, as Ghalimi points out, these new applications will have built-in collaboration capabilities, ideal for business. Finally, IT can provide and manage the endless amounts of storage that end users seem to demand. No external service will be necessary.

Certainly, there will always be applications that require local storage on PCs and individuals who need it. But in the coming years, you may have to convince your CIO that you're not crazy when you ask for it. ▸

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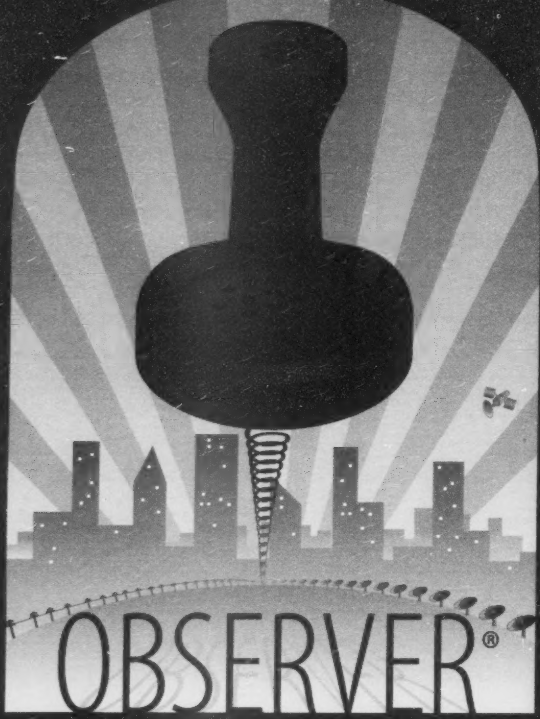

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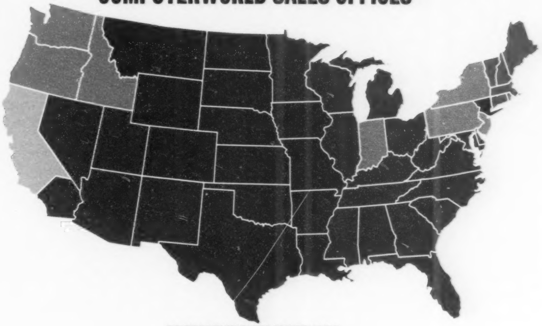

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Security Risk

But with more than 42 million of Apple Computer Inc.'s iPods sold so far in the U.S. alone, the threat of data theft or loss from downloading information on a USB port device is growing exponentially, according to analysts. Apple officials declined to say whether they plan to improve iPod security.

"An iPod is just storage at the end of a wire," said John Webster, an analyst at Data Mobility Group LLC in Nashua, N.H. "You already see people using [iPods] as backup devices. USB storage devices are a potential source of data leakage."

Such concerns from corporate IT managers about corporate data loss have prompted vendors to develop products that can secure flash memory devices. For example, Kingston Technology Co. earlier this month released a USB flash drive that secures data using password protection and 128-bit hardware-based AES encryption.

Kingston's DataTraveler Elite Privacy Edition device offers up to 4GB of secure storage and has a mechanism that locks out potential users after 25 consecutive failed password attempts.

Recognizing the Risk

Baptist Memorial, which operates 20 hospitals and a network of outpatient and ambulatory surgery facilities, clinics and other health care facilities, uses the 1GB version of Kingston's USB drive.

Securing Leaks

Private corporate data can seep out via portable storage devices.

Baptist Memorial Health Care took a four-pronged approach to securing data:

❶ **Conduct executive and administrative awareness programs** and develop an administrative policy that is enforceable.

❷ **Audit the IT environment** to find all attached devices (USB, serial, Fire Wire, wireless and infrared).

❸ **Implement port control technology** and turn off specific devices that do not have a legitimate business justification and approval.

❹ **Provide a corporate-standard device** for approved data-transport purposes.

Goodman said that the health care company has also deployed a USB port-monitoring and policy enforcement application from Philadelphia-based Safend Inc.

"We feel we are ahead of our industry in general in recognizing the extreme exposure of ultrasmall, ultracapacity plug-and-play USB devices," Goodman said.

Eric Ouellet, an analyst at Gartner Inc. in Stamford, Conn., said that only about 10% of companies have any policies dealing with removable storage devices.

"It's actually a fairly big problem," Ouellet said. "You can put a small database on them. It's just a matter of time before we hear about someone losing data because of this."

He suggests that companies consider flash-drive monitoring software on PCs and laptops, from companies such as Pointsec Mobile Technologies AB, Utimaco Safeware Inc. and Centennial Software Ltd. Such applications can lock out USB drives or require that they have encryption and password protection in order to work.

For a free but unsophisticated application, companies can use the native lockout capabilities in the Windows operating system, Ouellet noted.

Meanwhile, SanDisk Corp. in Sunnyvale, Calif., last month said it plans to bolster the security in its line of USB flash drives and mobile cards by using TrustedFlash technology, which combines its 32-bit controller architecture with an embedded cryptographic engine to provide real-time encryption. ▸

Fed Up With Tape, Hospital Sings Praises of Jukebox

User weighs the cost of lost data

BY LUCAS MEARIAN

One day, Sanjay Shah, CIO at Cabell Huntington Hospital, simply stopped trusting magnetic tape for radiological image and patient-record backups. Instead, he and his IT team began using an optical disc jukebox for its backup and archive, and they have never looked back.

Despite the higher costs for optical media, and analysts' views that it should complement rather than replace tape, Shah said optical is his "near-line" and long-term backup technology of choice.

"Twenty years from now, if there's an image we need, we can actually access it and not wind up saying, 'Oops, it's not there,' " Shah said. "That's part of the total cost of tape. If you can't access the data, then whatever you spent on the tape was a waste."

The 300-bed hospital in Huntington, W.Va., first began using an optical jukebox from Melbourn, England-based Plasmon PLC to store medical records storage almost five years ago. At the time, the optical platters each held about 9GB of data.

But in December, the hospital installed a $2.5 million picture-archiving and communications system (PACS) that allows doctors and technicians to view radiological images and patient records from any secure port connection.

Cabell Huntington Hospital uses Plasmon's optical jukebox to store patient medical records.

Shah decided that the hospital needed a more sophisticated and higher-capacity backup technology, so he looked at EMC Corp.'s Centera content-addressed storage array, as well as the latest tape libraries. The Centera was too costly, and tape was still not reliable enough, he said.

"We've had real-life experiences with tape just going bad on the shelf, even though we rotate them out after 50 uses. We just felt more secure with optical," said Jason Hill, Huntington's radiology systems analyst.

Shah chose to upgrade the hospital's optical jukebox to Plasmon's 13TB model, filled with 30GB platters.

Shah uses his optical jukebox the same way many IT managers use midrange disk arrays: as near-line storage for the hospital's PACS. Whereas it may have taken from minutes to days to find data stored on tapes on- and off-site, the jukebox offers up data in seconds. It's also a format that is clearly approved by regulators as a WORM (write once, read many) technology, Shah said.

Huntington built out a two-tiered storage infrastructure, in which all data is stored on an EMC Clariion CX600 array for the first two years and then migrated to optical disc, where it's copied to two platters; one platter is off-site for disaster recovery and the other on-site for near-line storage.

Hill said he also likes the fact that if a server goes down, he can always restore it by just pulling a platter out of the jukebox and placing it in a blue-laser-compatible DVD drive.

Robert Amatruda, an analyst at IDC, said users generally don't choose between tape and optical.

"It's not an either/or thing. I think that the optical technologies have really got a play in the enterprise, but it's still a complementary model alongside tape," he said.

Amatruda acknowledged that optical disc technologies have tripled and quadrupled in capacity over the past year, but at $60 for a 30GB platter, tape still carries the day for price-sensitive users. A 100GB DLT-4 tape cartridge costs about $30, he said.

"At the end of the day, the optical automation market has been pretty small. It's not been a growing market," Amatruda said. "They need some pretty major endorsements from servers and systems vendors." ▸

Correction

The On the Mark column in the Feb. 27 issue's News section incorrectly identified a tool for automatically sorting and indexing documents that is developed by Compulink Management Center Inc., a Long Beach, Calif.-based company that does business under the name Laserfiche Document Management. The software is called Quick Fields.

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #40063800. **CANADIAN POSTMASTER:** Please return undeliverable copy to PO Box 1632, Windsor, Ontario N9A 7C9. Computerworld (ISSN 0010-4841) is published weekly; except a single combined issue for the last two weeks in December by Computerworld, Inc., 1 Speen Street, Box 9171, Framingham, Mass. 01701-9171.

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FRANK HAYES ■ FRANKLY SPEAKING

No Private Vistas

THINK Microsoft Vista's latest schedule slip doesn't matter? (See story, page 6.) Think again. Sure, last week's announcement — that the next version of Windows won't be out in time for holiday sales — is more an industry sideshow than a big deal for corporate IT. It'll stunt PC sales at the end of this year and give Microsoft-haters something more to bleat about. But for most IT shops, that delay just means we'll start testing Vista a little later.

Forget those details. Look at the big picture, and you'll see a nasty object lesson in what happens when you (and others) put too much trust in your ability to deliver software.

That's what Microsoft executives did. That's also what vendors and IT industry pundits did, which is why words like "bombshell" and "unthinkable" are being tossed around to describe the "Vista slips" announcement. They believed. They trusted.

They shouldn't have.

Vista is the most complicated software product in Microsoft's history, incorporating higher-quality standards and a new approach to software projects — and facing the same old "keep piling on the new features" culture. That's nothing to inspire confidence in a firm delivery date.

But Vista boss Jim Allchin promised that Vista would be delivered on time. Allchin is an executive who's well liked by his developers, and this product is his last hurrah. He staked his reputation on getting Vista out the door before he retired at the end of this year. And he believed, probably rightly, that his team would do everything in its power to make that happen.

Yes, they're all doing their best. But they can't work a miracle. Vista is irretrievably late. Microsoft is embarrassed again. PC makers insist that they won't take a significant hit in holiday sales, but Wall Street analysts are already recalculating their Q4 sales estimates.

Lost revenue, lost trust, a lost reputation. That's Vista's legacy, even before it's finished.

Ugly, yes? And it probably sounds familiar. Your IT shop likely has huge, challenging (and challenged) projects too. How do you avoid watching the next one become a Vista of your very own?

Start with the first rule of posterior protection: Underpromise and overdeliver. Or better yet: Make no promises at all.

If — pardon me, when — your boss, users or business partners demand a guaranteed deadline, give them a percentage chance that you can deliver the goods. That percentage goes up if they can accept functionality that doesn't work in the first version. But promise nothing.

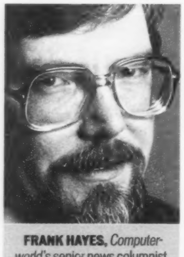
Drum into the head of every developer, user and executive that every added feature costs time, and the later it's added, the more time it costs. And that removing features late in the game doesn't save time; it *costs* time to cut that code and retest.

Ask users what their plans are for the new system — how they'll use it, when they expect it. Then concentrate on what will be important to them. Users aren't stupid, and most of them don't have it in for IT. They won't crucify you for bugs as long as there are work-arounds, or for missing features as long as first-draft software does the core of what they need.

Expect to be blindsided by *something*. And when you hit a hard bump that delays you, tell users and management. They'll be unhappy, but not being warned would make them even unhappier.

Keep reminding everyone that hard work later is no substitute for good design earlier, and that, as Brooks' Law says, adding more developers makes a late project later. Encourage brilliant solutions, but don't count on them. Reward real results, not paper promises. Trust working code, not good intentions.

And remember: Delivering IT systems is still at best two parts engineering to one part black art. Slips happen; you can't avoid them. But promise nothing, communicate reality and stick to the plan, and you have a much better chance of avoiding your own private Vista. ▸



FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at **frank_hayes@computerworld.com**.

Terrific Ideas

For the past few years, to keep track of this projector, IT staffers at this corporate office have been using a sign-out sheet. But one day, a VP doesn't want to go through the sign-out process. "It's only for an hour," he complains. "I don't see why I have to. What's the point?" IT pilot fish calmly explains that it's the only way to prevent the projector from disappearing. Besides, says fish, you're the one who came up with the sign-out sheet idea, and it's worked well so far. "Really?" says VP. "Oh. It's a terrific idea, then."

SHARK TANK

Helpful

Employees in this office are friendly and talkative, so consultant pilot fish ends up getting most of his work done after hours. One evening, the company president stops by and, after chatting about the weather, fishing and company gossip, asks how the project is going. "Pretty well," fish says, except for delays from the frequent interruptions." Interruptions? says the boss. Tell me about the interruptions. I'll put a stop to them. "Well," says fish, "this is one."

Adult Behavior

New boss is supposed to get copies of management-related e-mails. And to make sure they're received and read, they're sent with the "request read receipt" flag turned on. The old boss just set his e-mail to respond automatically – but not the new guy. "Apparently, his option is set to 'ask me before sending a receipt,' and he refuses to change it," netadmin pilot fish sighs. "He says read receipts shouldn't have to be sent anyway, since 'we're all adults.' Our work-around? Turn off 'request read receipt' when sending e-mail to the boss."

Um, Right

Pilot fish is proudest of one paper-reducing application: a Web form for parts that is sent from approver to approver until each part is set up or rejected. But one day he's in the purchasing department and sees an agent shredding a printout of a Web page. Is that from the parts application? fish asks. Agent: "Yes, we always print a copy and shred it afterwards. It makes it easier to keep up with everything."

Face Time

Manufacturing plant manager calls pilot fish to come up from the data center right away. But why? Fish can't think of any active projects the boss would be interested in. "Do you have an engineering degree?" boss asks. Yes, I do, fish replies. Boss: "Well, I have this clock that I had the technicians change a light bulb in. Could you put the hands back on the face for me?"

TAKE TIME FOR SHARKY. Send me your true tale of IT life at **sharky@computerworld.com**. You'll snag a snazzy Shark shirt if I use it. And check out Sharky's blog, browse the Sharkives and sign up for Shark Tank home delivery at **computerworld.com/sharky.**

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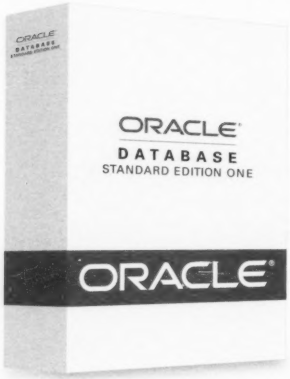

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